

Service Manual

Dolby NR-Equipped
Stereo Double Cassette Deck

Cassette Deck

RS-X301



Color

(K)...Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	(K)
(EG)	F.R. Germany and Italy.	(K)
(GC)	Asia, Latin America, Middle Near East and Africa.	(K)
(GN)	Oceania.	(K)

RS-X933 MECHANISM SERIES (AR300)

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads	
(tape deck 2) Rec/play	Permalloy head
Erasing	Double-gap ferrite head
(tape deck 1) play	Permalloy head
Motors	
(tape deck 2) Capstan/reel table drive	DC servo motor
(tape deck 1) Capstan/reel table drive	DC servo motor
Recording system	
Bias frequency	AC bias
Erasing system	80 kHz
Tape speeds	AC erase
Frequency response (w/o Dolby NR)	4.8 cm/sec. (1-7/8 ips)
NORMAL	30 Hz~16 kHz
CrO ₂	40 Hz~15 kHz (DIN)
METAL	30 Hz~16 kHz
	40 Hz~15 kHz (DIN)
	30 Hz~18 kHz
	40 Hz~17 kHz (DIN)
S/N (signal level = max recording level, CrO ₂ type tape)	
Dolby C NR on	74 dB (CCIR)
Dolby B NR on	66 dB (CCIR)
Dolby NR off	56 dB (A weighted)

Wow and flutter

0.1 % (WRMS)

Fast forward and rewind times

Approx. 110 seconds with C-60 cassette tape

Input sensitivity and impedance

LINE 60 mV/47 kΩ

Output voltage and impedance

LINE 400 mV/800 Ω

■ GENERAL

Power consumption

15 W

Power supply AC 50/60Hz 220V

[(EG) area only]

Dimensions (W × H × D)

360 × 129 × 285 mm

(14-3/16" × 5-3/32" × 11-7/32")

Weight

For [EG] area.

4.0kg (8.8 lb.)

For others.

3.5kg (7.7 lb.)

Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

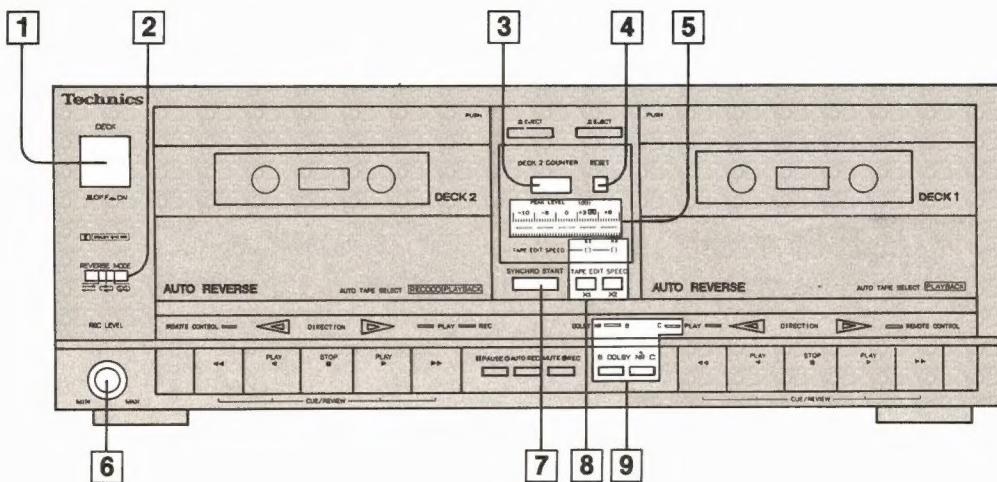
Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

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LOCATION OF CONTROLS



Controls common to both tape decks

- 1 Power on/standby  switch (POWER)...For (EG) area only.**
- DECK ON/OFF switch (DECK)...For others.**
- 2 Reverse-mode selector (REVERSE MODE)**
This selector can be used for selection of the reverse mode (for either playback or recording).
- 3 Tape counter (DECK 2 COUNTER)**
Indicates the amount of tape movement.
- 4 Tape counter reset button (RESET)**
This button can be used to reset the tape counter indication to "000".
- 5 Input level meter (PEAK LEVEL)**
During playback, this meter indicates the level of the recorded sound source.
During recording, it indicates the level being recorded, adjusted by the recording-level controls.
- 6 Recording-level control (REC LEVEL)**
This control can be used to regulate the recording level of tape deck 2.

7 Synchro-start button (SYNCHRO START)

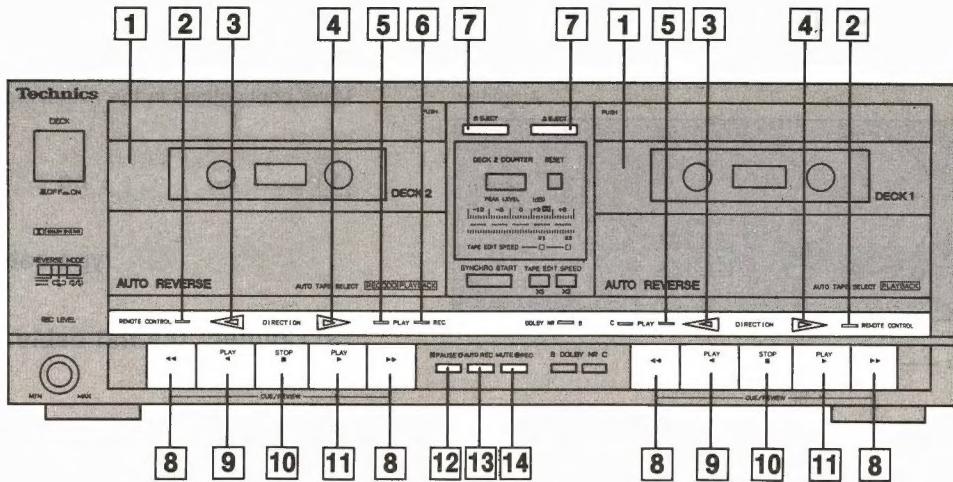
This button can be used to start a tape-to-tape recording, simultaneously starting tape deck 1 (the playback deck) and tape deck 2 (the recording deck).

8 Edit-recording tape-speed buttons/indicators (TAPE EDIT SPEED)

These buttons can be used to select the recording speed when a tape-to-tape recording is made.

9 Dolby noise-reduction buttons/indicators (DOLBY NR)

These buttons can be used to reduce the hiss noise that is characteristic of tape. This unit is provided with both the B-type and C-type noise-reduction systems.



Controls applicable to tape deck 1 and/or 2

1 Cassette holder

2 Remote-control indicator (REMOTE CONTROL)

This indicator illuminates to indicate that this tape deck can now be controlled by the remote-control transmitter.

3 Reverse-side indicator (◀)

This indicator illuminates, during playback or recording on tape deck 2, to indicate that side "B" of the tape is being used.

4 Forward-side indicator (▶)

This indicator illuminates, during playback or recording on tape deck 2, to indicate that side "A" of the tape is being used.

5 Playback indicator (PLAY)

When this indicator illuminates steadily, it indicates that this tape deck is in the playback mode or the recording mode (for tape deck 2 only).

When it flashes continually, this is an indication that tape deck 2 is in the pause mode or the recording stand-by mode.

6 Recording indicator (REC)

This indicator illuminates to indicate that tape deck 2 is in the recording stand-by mode or is recording.

7 Eject button (▲ EJECT)

This button can be used to open the cassette holder.

8 Fast-forward/cue, rewind/review buttons (◀◀/▶▶)

These buttons are used to advance or rewind the tape. During playback these buttons are used to cue or review while listening to the contents at high speed.

9 Reverse-side playback button (◀/PLAY)

This button can be used to start the playback or recording (of deck 2 only) of side "B" of the cassette in this tape deck. (The tape will then begin moving in the right-to-left direction.)

10 Stop button (■/STOP)

This button can be used to stop tape movement.

11 Forward-side playback button (▶/PLAY)

This button can be used to start the playback or recording (of tape deck 2 only) of side "A" of the cassette in this tape deck.

(The tape will then begin moving in the left-to-right direction.)

12 Pause button (■ PAUSE)

This button can be used to temporarily stop the tape playback or recording, on tape deck 2 only.

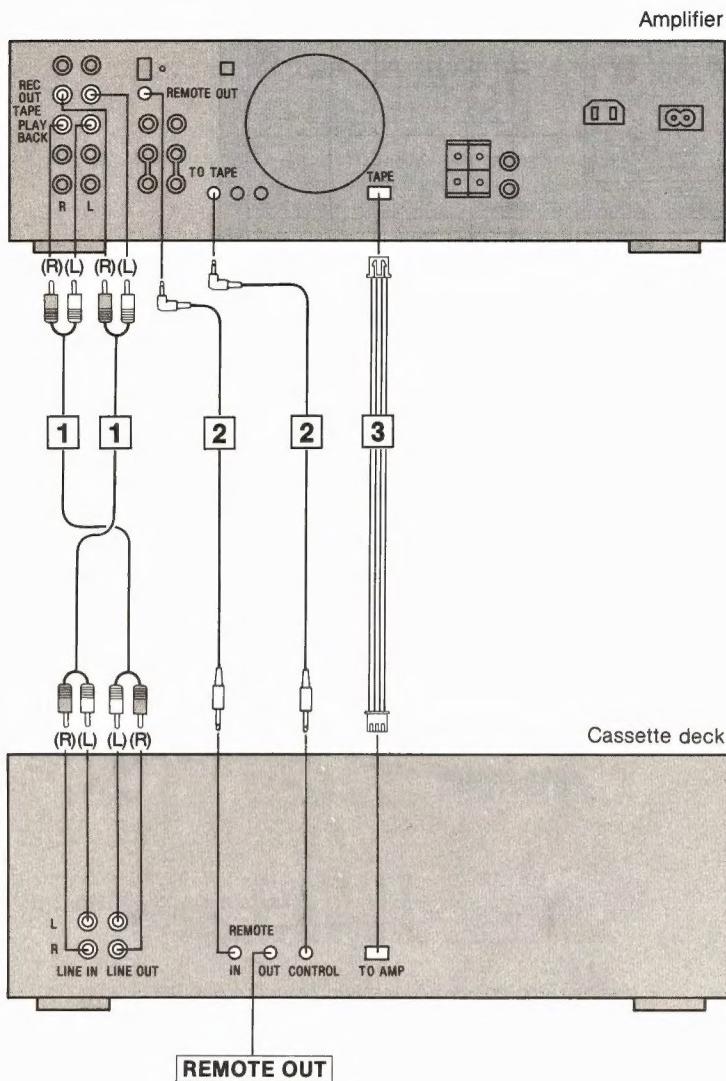
13 Automatic-record-muting button (○ AUTO REC MUTE)

This button can be used to make (during recording) a silent interval on the tape, on tape deck 2 only.

14 Record button (● REC)

This button can be used to change tape deck 2 to the recording stand-by mode.

■ HOW TO CONNECTION



Make connections in the numbered sequence by using the included cables.

1 Connect the stereo connection cables.

2 Connect the L-type cables.

3 Connect the flat cable.

REMOTE OUT

Connect the L-type cable (not included) to the "REMOTE INPUT" terminal of the graphic equalizer.

Note:

If the unit is not to be connected with the graphic equalizer, connect the L-type cable (included with the compact disc player) to the "REMOTE IN" terminal of the compact disc player.

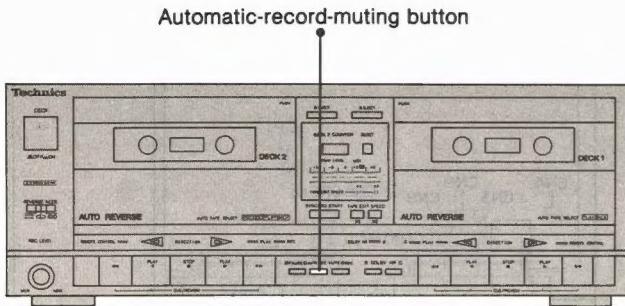
■ ACCESSORIES

- | | | | | | |
|---------------------------------|---|----------------------|---|--|---|
| • Stereo connection cables..... | 2 | • L-type cables..... | 2 | • AC power supply cord (polarized).... | 1 |
| (SJP2249-3) | | (SJP2257T) | | (SFDAC05E03: (EG)) | |
| • Flat cable | 1 | | | | |
| (REX0036: (E, EB, GC, GN)) | | | | | |

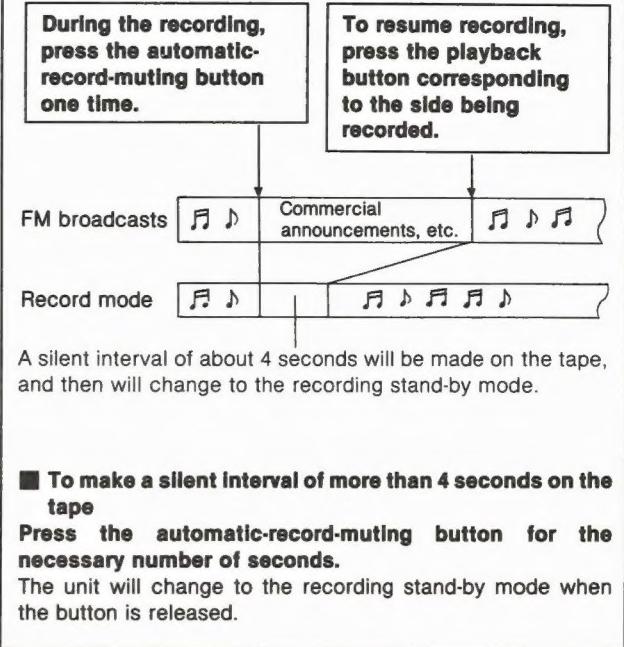
■ CONVENIENT FEATURES FOR RECORDING

Automatic-record-muting function

By simply pressing the automatic-record-muting button while a recording is being made, a silent interval (which is necessary for locating the beginning of a tune) can be made.



This feature is also convenient for omitting, during recording, unwanted material such as commercial messages, etc.



Synchro-recording

This is a convenient feature that, when this unit is in the recording stand-by mode, will start the recording automatically when the compact disc player or turntable begins playing. When the play stops, a silent interval of about 4 seconds will be made, and the tape deck will change to the recording stand-by mode. This synchro-recording feature can only be used in combination with a Technics compact disc player or turntable that also has the synchro-recording function.

■ TIMER RECORDING/PLAYBACK

If this unit is connected to the tuner (ST-X301L) with the audio timer, recording of radio broadcasts or tape playback will automatically begin at the preset time.

(See the operating instructions of the tuner for detailed information.)

Note:

Playback of one deck only can only be done by deck 2.

Timer recording (tape deck 2 only)

1. Prepare for recording.

After adjusting the recording level, press the stop button. Check the tape side ("A" or "B") to be recorded on to be sure it is correct.

2. Set the tuner to the desired recording-start time and select the recording mode (REC).

(At the set time, the power will be switched on and the input selector of the amplifier will be switched to "TUNER"; the recording will then begin.)

■ After setting the timer

Check to be sure that the power switch of the amplifier and the DECK ON/OFF switch of the cassette deck are set to the "ON" position.

Timer playback

Series playback (tape deck 2 and then tape deck 1) is also possible.

1. Rewind the tape to the position from which you want playback to begin.

Check the tape side ("A" or "B") to be played back to be sure it is correct.

2. Set the tuner to the desired playback-start time and select the playback mode (PLAY).

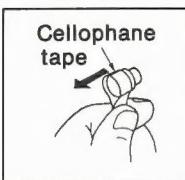
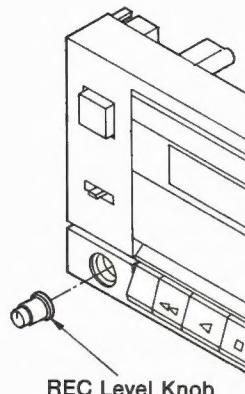
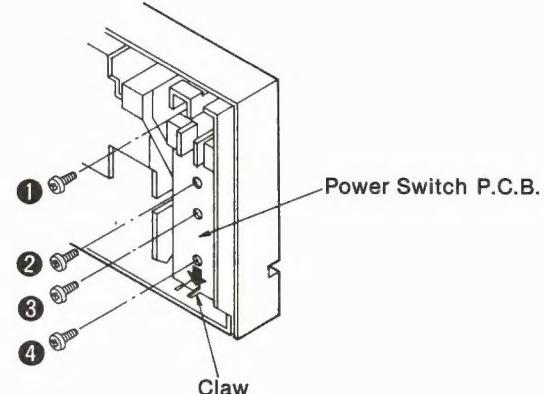
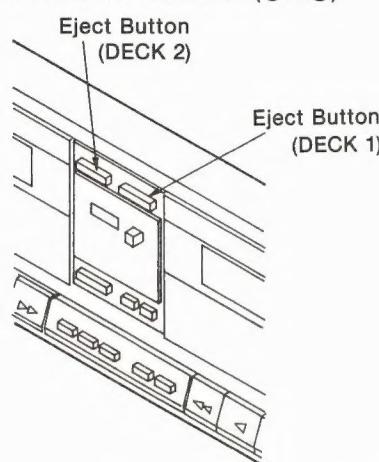
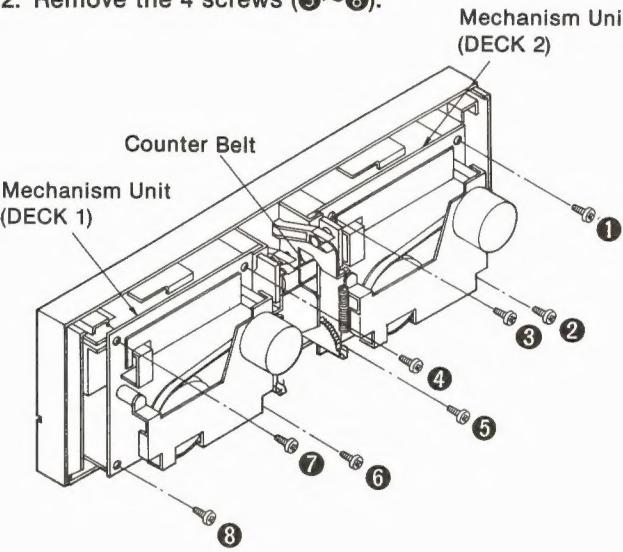
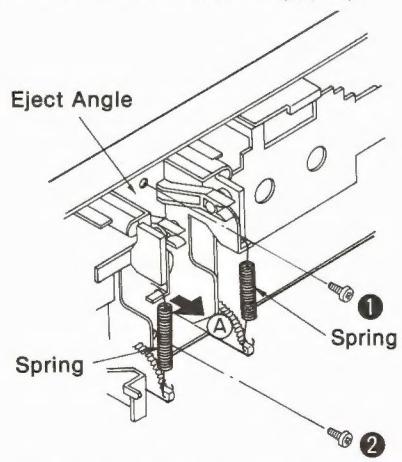
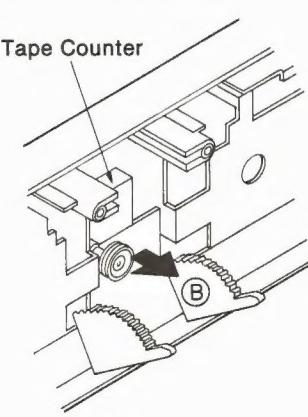
(At the set time, the power will be switched on and the input selector of the amplifier will be switched to "TAPE"; the playback will then begin.)

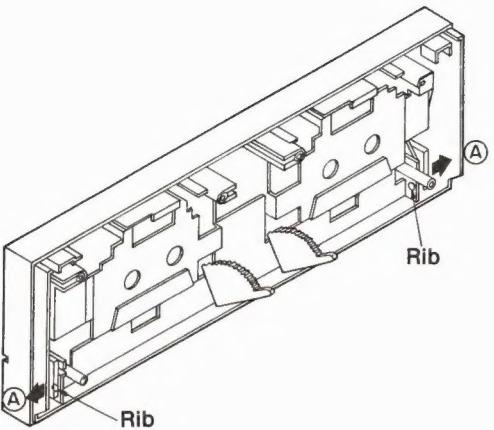
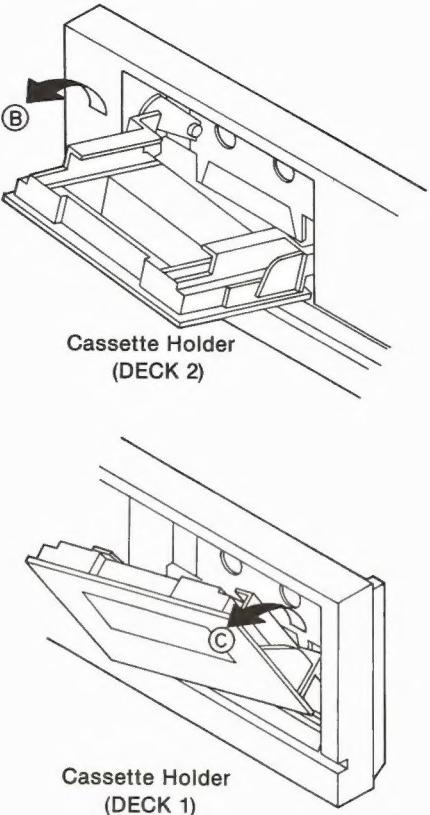
■ After setting the timer

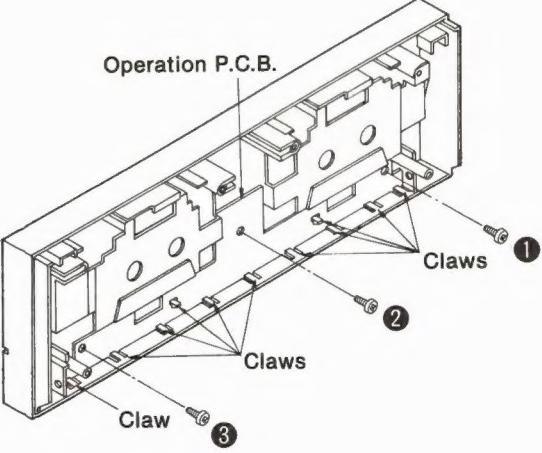
Check to be sure that the power switch of the amplifier and the DECK ON/OFF switch of the cassette deck are set to the "ON" position.

■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	Removal of the Cabinet	Ref. No. 2	Removal of the Front Panel
Procedure 1	<ul style="list-style-type: none"> Remove the 6 screws (①~⑥). 	Procedure 1→2	<ol style="list-style-type: none"> Remove the 8 flat cables (CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10). Remove the 2 connections (CP1, CP2).
Ref. No. 3	Removal of the Main P.C.B.		<ol style="list-style-type: none"> Remove the 3 screws (①~③). Remove the front panel in the direction of the arrow.
Procedure 1→2→3	<p>[E, EB, GC, GN] areas.</p> <ol style="list-style-type: none"> Remove the 8 screws (①~⑧). 		<p>How to remove the flat cable</p> <ul style="list-style-type: none"> Pull out the flat cable while pressing the connector. Lift the connector. Pull out the flat cable.

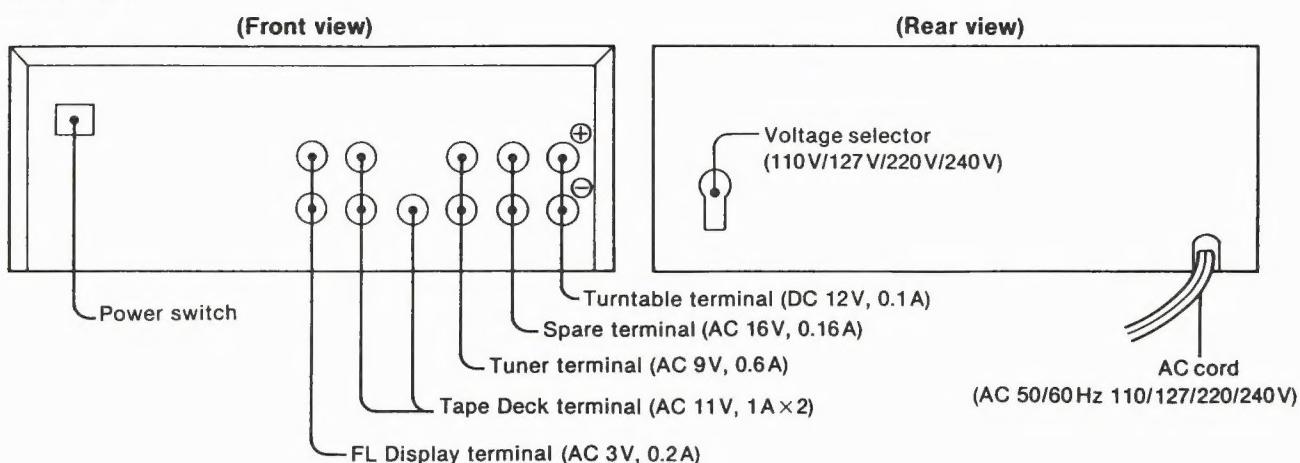
Ref. No. 5	Removal of the Power/Reverse Mode/REC Level P.C.B.	2. Remove the 4 screws (①~④). 3. Release the 1 claw.
Procedure 1→2→5	1. Remove the rec level knob.	
	  <p>• Wind cellophane tape around the knob and pull it the direction of the arrow.</p>	
		 <p>Power Switch P.C.B.</p> <p>Claw</p>
Ref. No. 6	Removal of the Mechanism Units	• Removal of the Mechanism Unit (DECK 1) 1. Push the eject button. 2. Remove the 4 screws (⑤~⑧).
Procedure 1→2→6	<ul style="list-style-type: none"> • Removal of the Mechanism Unit (DECK 2) <ol style="list-style-type: none"> 1. Push the eject button. 2. Remove the counter belt. 3. Remove the 4 screws (①~④). 	  <p>Mechanism Unit (DECK 2)</p> <p>Counter Belt</p> <p>Mechanism Unit (DECK 1)</p>
Ref. No. 7	Removal of the Eject Angle and Tape Counter	3. Remove the eject angle in the direction of the arrow Ⓐ. 4. Remove the tape counter in the direction of the arrow Ⓑ.
Procedure 1→2→6→7	<ol style="list-style-type: none"> 1. Remove the spring. 2. Remove the 2 screws (①, ②). 	  <p>Eject Angle</p> <p>Spring</p> <p>Tape Counter</p> <p>Ⓐ</p> <p>Ⓑ</p>

Ref. No. 8	Removal of the Cassette Holder
Procedure 1→2→6 →7→8	<p>1. Remove the ribs in the direction of the arrow A.</p> 
	<p>2. Remove the cassette holder (DECK 2) in the direction of the arrow B.</p> <p>3. Remove the cassette holder (DECK 1) in the direction of the arrow C.</p> 

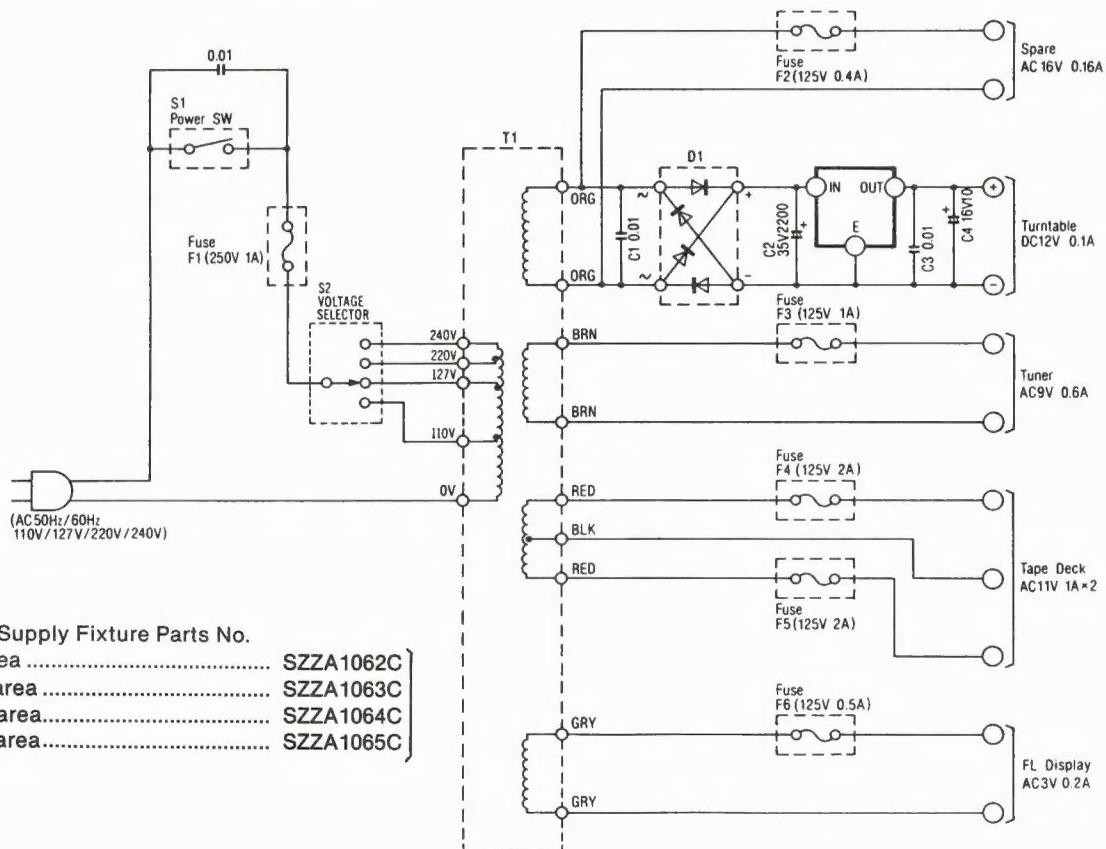
Ref. No. 9	Removal of the Operation P.C.B.
Procedure 8→9	<p>1. Remove the 3 screws (①~③).</p> <p>2. Release the 11 claws.</p> 

■ INFORMATION ON POWER SUPPLY FIXTURE

• LOCATION



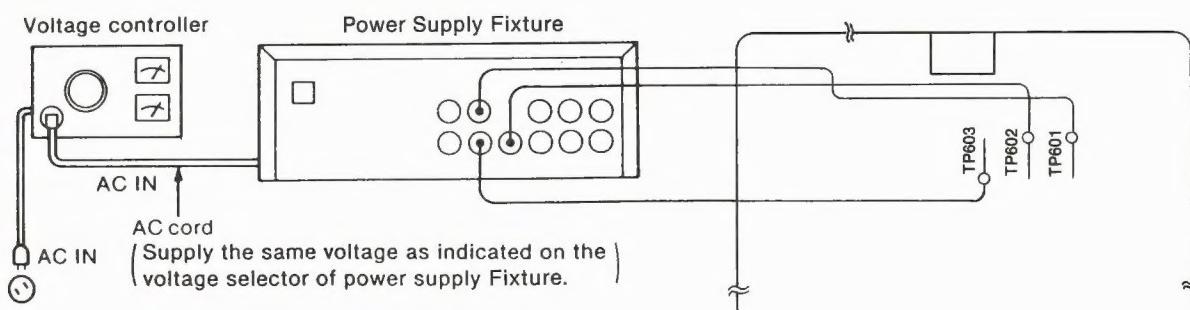
• SCHEMATIC DIAGRAM (Reference)



※ Power Supply Fixture Parts No.

- | | |
|-------------------|-----------|
| • (E) area | SZZA1062C |
| • (EB) area | SZZA1063C |
| • (GN) area..... | SZZA1064C |
| • (GC) area..... | SZZA1065C |

• HOW TO CONNECT



■ MEASUREMENT AND ADJUSTMENT METHODS

Measurement Condition

- Rec. level control; Maximum
- Reverse-mode selector switch;
- Edit-recording tape-speed selector; X1

- Dolby NR switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

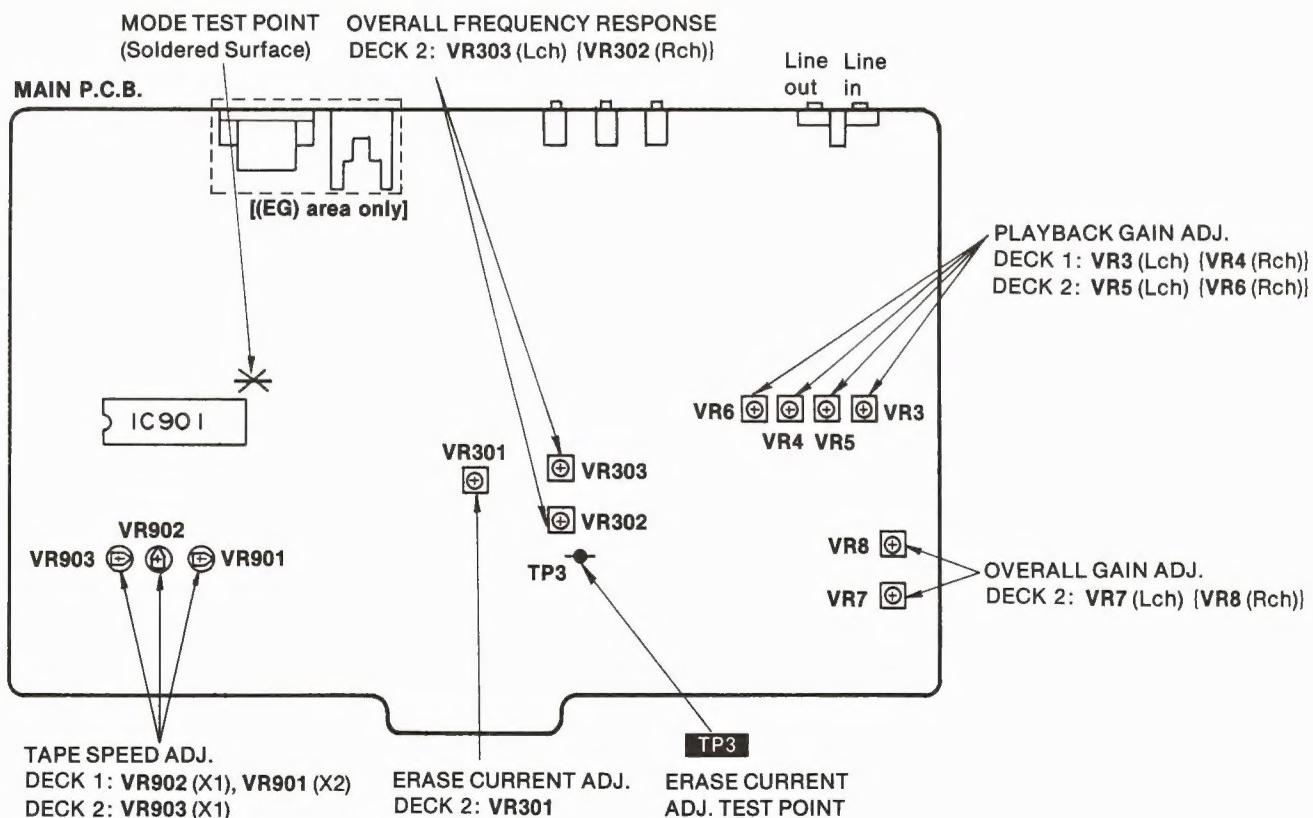
- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
Normal reference blank tape ; QZZCRA
CrO₂ reference blank tape; QZZCRX
Metal reference blank tape; QZZCRZ

• Adjustment Points



HEAD AZIMUTH ADJUSTMENT (DECK 1/2)

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

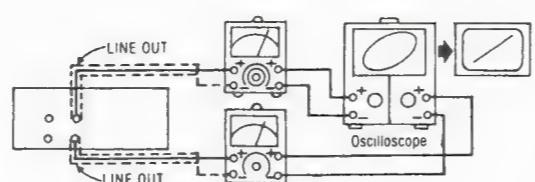


Fig. 1

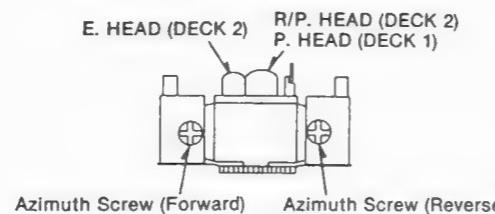


Fig. 2

TAPE SPEED ADJUSTMENT (DECK 1/2)**Normal speed**

1. Shift the edit-recording tape-speed selector to "X1".
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust Deck 1=VR902 and Deck 2=VR903 so that the output is within the standard value.

High speed

4. Shift the edit-recording tape speed switch to "X2".
5. Playback the middle portion of the test tape (QZZCWAT).
6. Adjust Deck 1=VR901 so that the output is within the standard value.

Note: The Normal speed adjustment must be done before the High speed adjustment.

(DECK 2) Standard value: 3000 ± 15 Hz [Normal (X1)], 6000 ± 600 Hz [High (X2), only confirmation]

(DECK 1) Standard value: 3000 ± 15 Hz [Normal (X1)], 6000 ± 30 Hz [High (X2)]

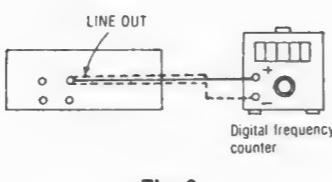


Fig. 3

PLAYBACK GAIN ADJUSTMENT (DECK 1/2)

1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust Deck 1=VR3 (L-CH) [[VR4 (R-CH)]] and Deck 2=VR5 (L-CH) [[VR6 (R-CH)]] so that the output is within the standard value.

Standard value: $0.4V \pm 0.5dB$

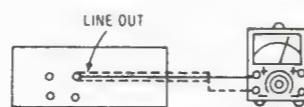


Fig. 4

PLAYBACK FREQUENCY RESPONSE (DECK 1/2)

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

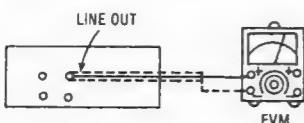


Fig. 5

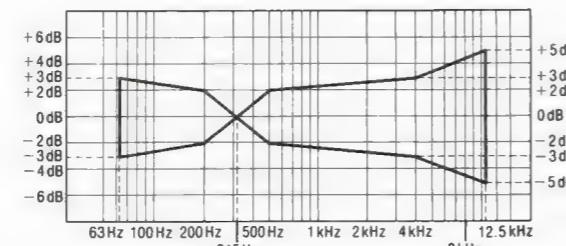


Fig. 6

ERASE CURRENT ADJUSTMENT (DECK 2)

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Adjust VR301 so that the output between TP3 and GND is within the standard value.

Standard value: 190 ± 5 mA (Metal)...EVM Reading: 190 ± 5 mV

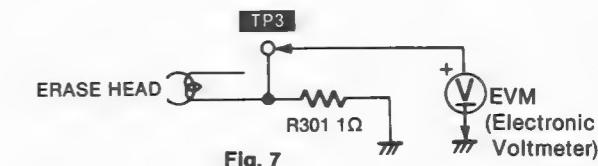


Fig. 7

OVERALL FREQUENCY RESPONSE (DECK 2)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1kHz, -24dB) through an attenuator.
3. Attenuate the signal by 20dB and adjust the frequency from 50Hz~10kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1kHz).
6. If it is not within the standard range, adjust VR303 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.
 - Level up in high frequency rangeIncrease the bias current.
 - Level down in high frequency range ...Decrease the bias current.
7. Repeat steps 2~6 above using the CrO₂ tape (QZZCRX) and the Metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
8. Assure that the level is within the range shown in Fig. 9.

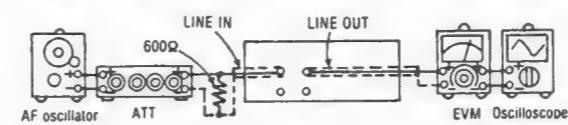


Fig. 10

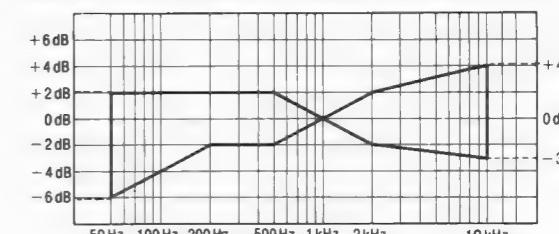
Normal Overall frequency response chart (NR OUT)

Fig. 8

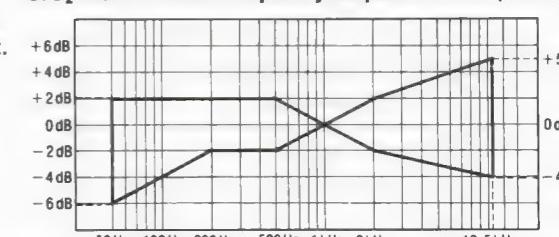
CrO₂ Metal Overall frequency response chart (NR OUT)

Fig. 9

OVERALL GAIN ADJUSTMENT (DECK 2)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1kHz, -24dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust VR7 (L-CH) and VR8 (R-CH).
6. Repeat the step 2~5 above until the output is within the standard value.

Standard value: $0.4V \pm 0.5dB$

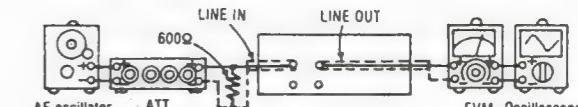


Fig. 11

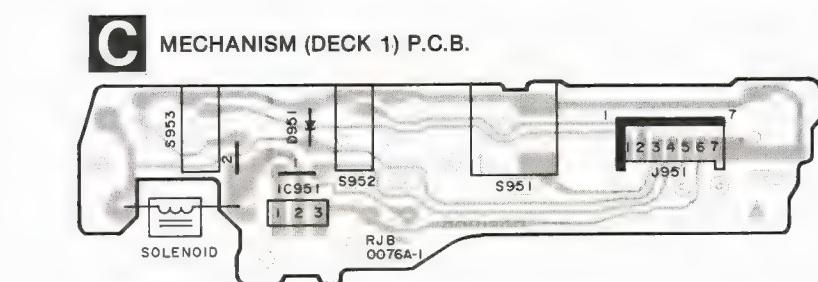
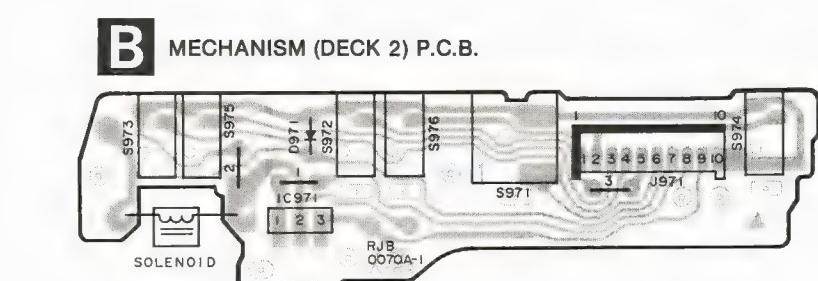
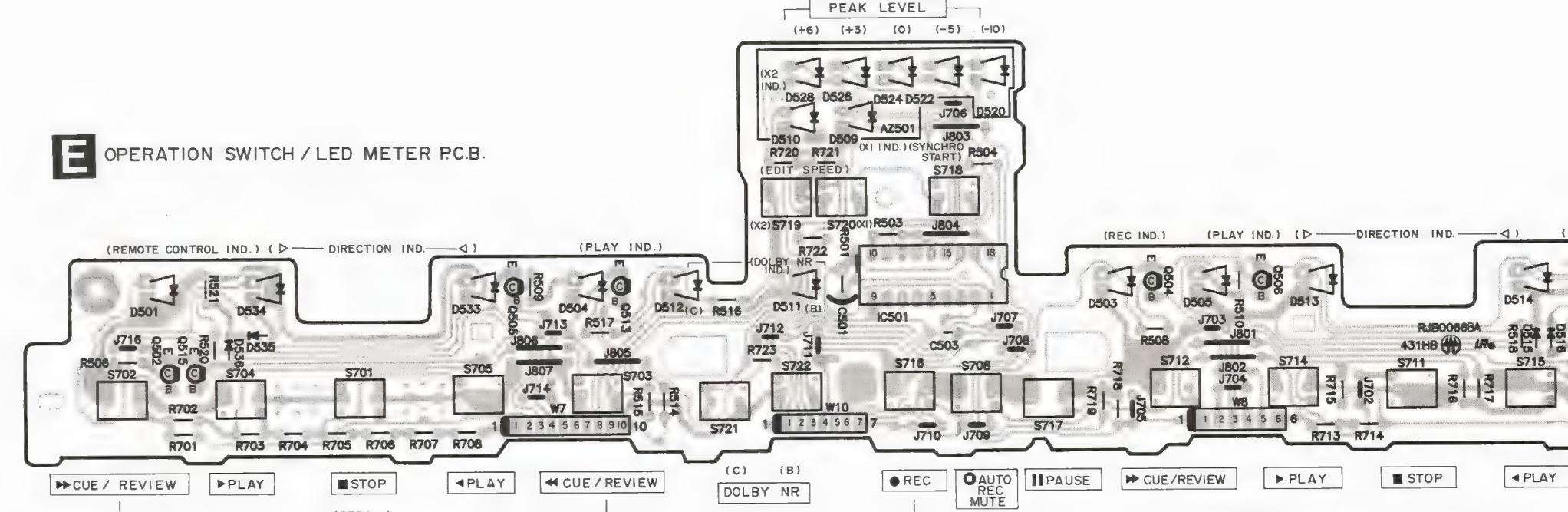
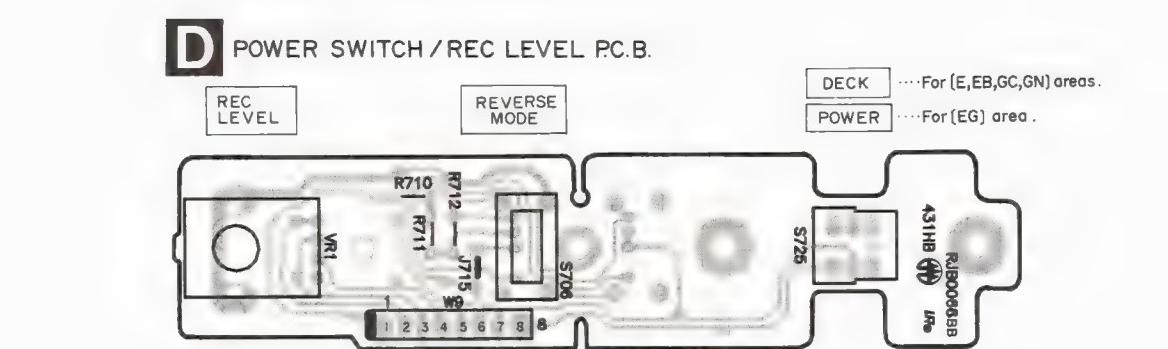
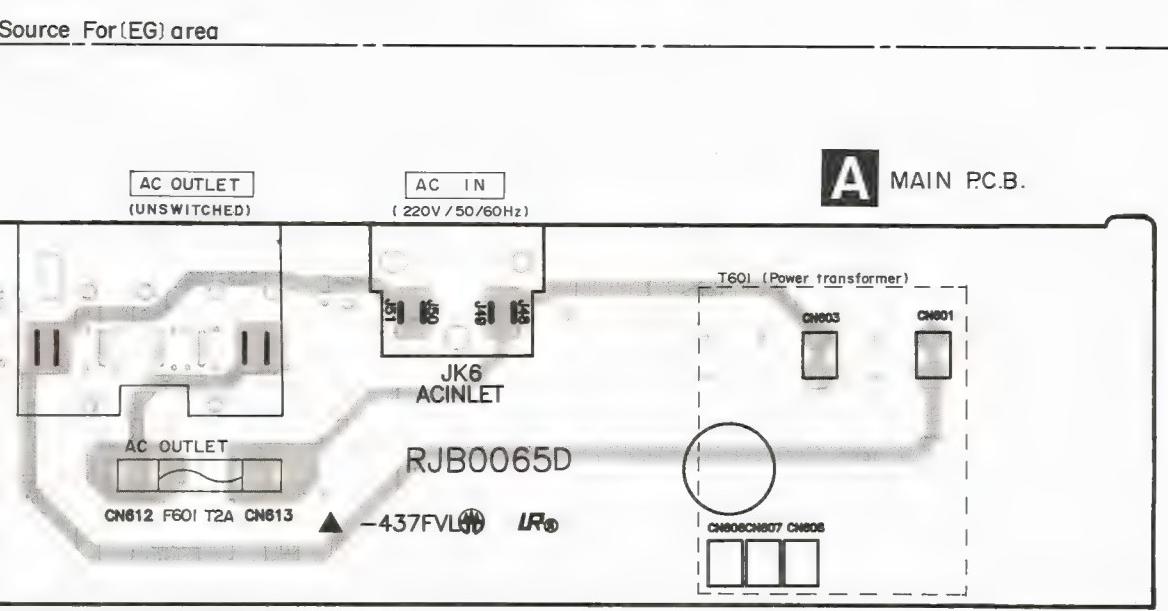
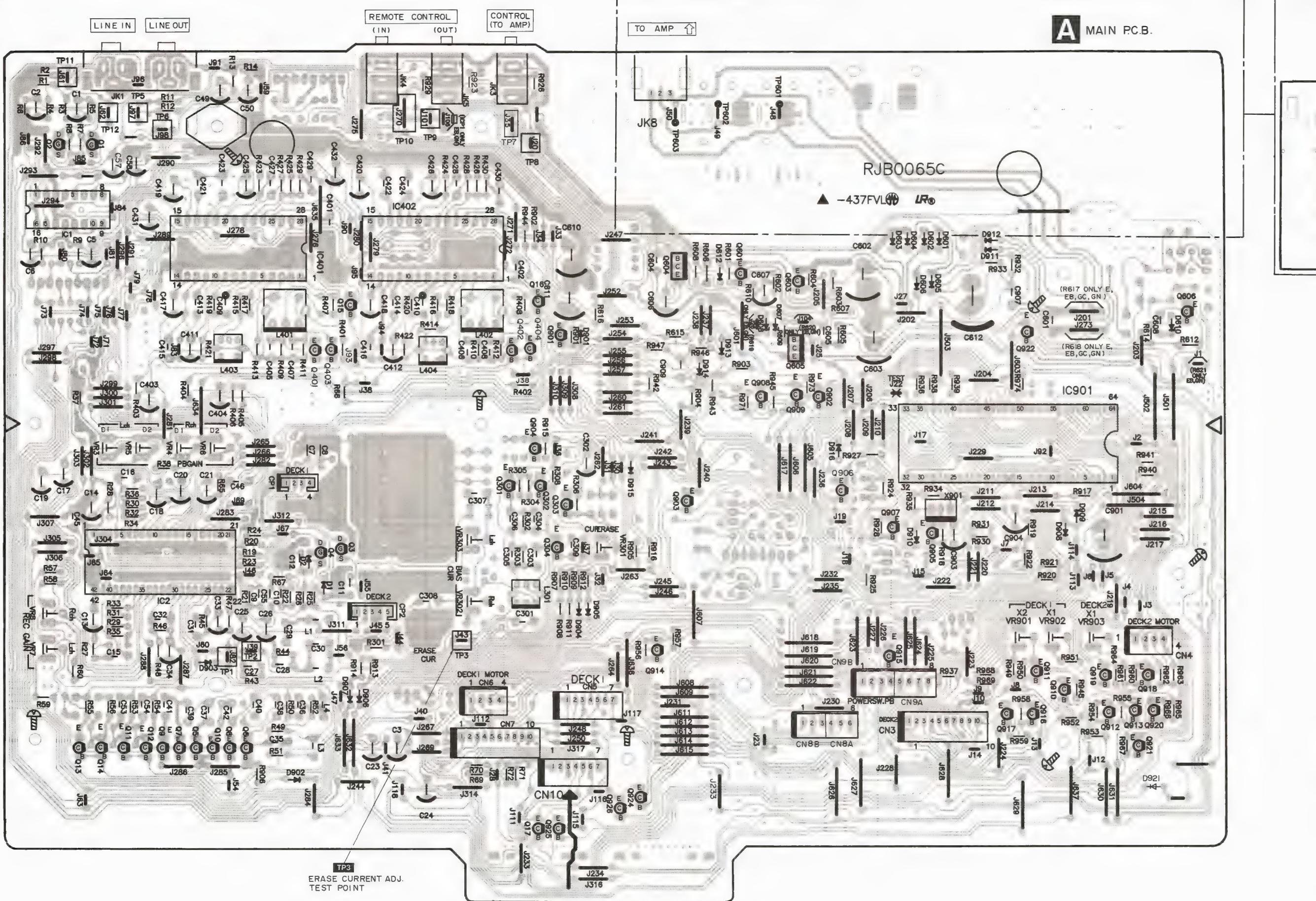
TERMINAL FUNCTION OF IC's

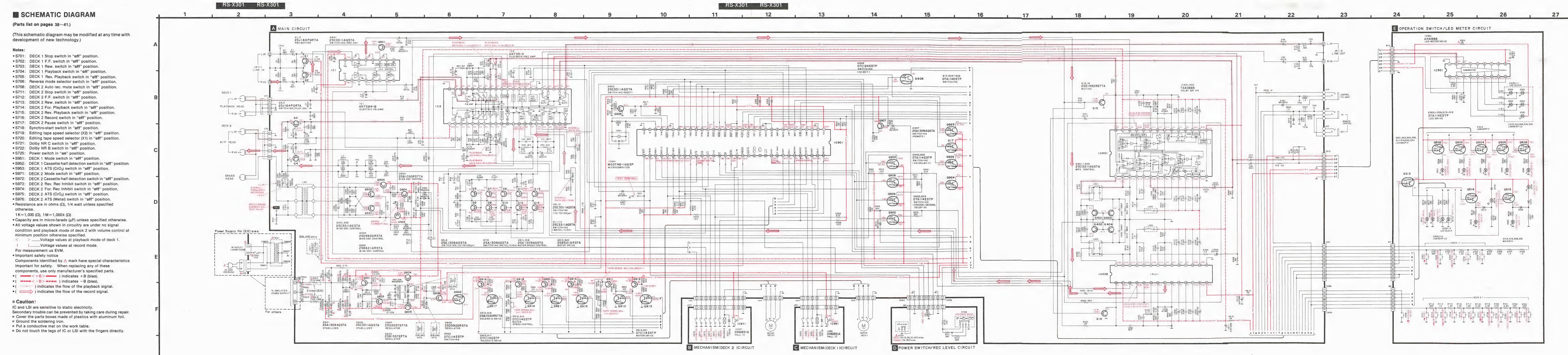
• IC901 (M50746-166SP): MICROCOMPUTER

Pin No.	Mark	I/O Division	Function
1	Vcc	I	Power supply terminal
2	AV _{ss}	—	• Connected to V _{ss}
3	V _{REF}	I	Standard voltage terminal (5V)
4	CRM	O	CUE/REV mute signal • "L" level in muting is off mode. • "H" level in muting is on mode.
5	DIR 2	O	Direction indicator signal of deck 2 • "L" level with forward mode. • "OPEN" with reverse mode.
6	MMT	O	Mute mute control signal • "L" level in muting is off mode. • "OPEN" when muting is on mode.
7	LMT	O	Line out mute signal
8	RMT 2	O	Rec. amp. mute signal of deck 2 • "L" level in mute is off mode. • "H" level in mute is on mode.
9	DMT	O	Line out mute signal (Not used) • "L" level in muting is off mode. • "OPEN" when muting is on mode.
10	REV 2	—	Connected to GND
11	REV 1	—	Connected to GND
12	KEY 2	I	Key switch scan (DECK 2: STOP, F.F., REW, F. PLAY, R. PLAY, REC., PAUSE, S. START, X2, X1, DOLBY C, B)
13	KEY 1	I	Key switch scan (DECK 1: STOP, F.F., REW, F. PLAY, R. PLAY)
14	PLAY 2	O	Deck 2 Playback LED display/CUE, REV, LED display
15	PLAY 1	O	Deck 1 Playback LED display/CUE, REV, LED display
16	ARM 2	I	Auto Rec. mute terminal. "L"=KEY ON, "H"=KEY OFF
17	REC 1	I	Not used.
18	REC 2	O	Deck 2 Rec. mode LED display • "L" level in Deck 2 Rec. mode. • "H" level in other mode.
19	REM 2	O	Deck 2 Remote control LED display • "L" level in LED on mode. • "H" level in LED off mode.
20	REM 1	O	Deck 1 Remote control LED display • "L" level when LED is on mode. • "H" level when LED is off mode.
21	RENA	O	1 side select signal to CD player, used during CD synchro editing mode.
22	SYNC	I	Synchro start signal input from CD player
23	RCS	I	Remote control serial data
24	TREC	I	Timer rec terminal (Not used, open)
25	TPLAY	I	Timer play terminal (Not used, open)
26	POF	I	Primary AC power detection terminal
27	CNV _{ss}	—	Connected to V _{ss}
28	RESET	I	Reset terminal • "L" level when reset is on mode. • "L" → "H" level when reset is off mode.
29	XIN	I	Clock OSC terminal
30	XOUT	O	
31	Φ	I	Not used, open.
32	V _{ss}	—	Connected to GND
33	TEST	—	Test terminal
34	PWIN	I	Power ON/OFF switch input • "L" level with power ON • "H" level with power OFF
35	REEL 1	I	Deck 1 Rotation pulse signal of reel table

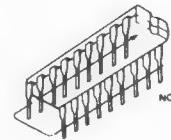
Pin No.	Mark	I/O Division	Function
36	REEL 2	I	Deck 2 Rotation pulse signal of reel table
37	RINH 2	I	Deck 2 Reverse Rec. Inh. switch select terminal
38	FINH 2	I	Deck 2 Forward Rec. Inh. switch select terminal
39	MODE 1	I	Deck 1 mechanism mode switch select terminal
40	HALF 1	I	Deck 1 cassette half detection switch • "L" level in half detection switch is on mode. • "H" level in half detection switch is off mode.
41	MPX	O	MPX filter IN/OUT control signal • "OPEN" with Dolby NR "IN" • "L" level with Dolby NR "OUT"
42	T2	O	Deck 2 play select signal • "L" level with PLAY/CUE/REVIEW mode. • "H" level with any other mode.
43	X2	O	X2 Speed LED display • "L" level when LED is on mode. • "OPEN" when other mode.
44	X1	O	X1 Speed LED display • "L" level when LED is on mode. • "OPEN" when other mode.
45	T/S	I	Connected to GND
46	C	O	Dolby C LED display • "L" level when LED is on mode. • "OPEN" when other mode. (Not used, open.)
47	B	O	Dolby B LED display • "L" level when LED is on mode. • "OPEN" when other mode.
48	ENC	O	Encode/Decode select signal • "L" level in encode mode. • "H" level in decode mode.
49	C/M	I	Deck 1 reverse mechanism select terminal (Connected to GND)
50	PWOUT	O	Power ON/OFF output terminal
51	SDATA	O	Serial data output (Not used, open)
52	P04 (○)	O	Not used, open
53	P03 (◐)	O	Not used, open
54	P02 (↔)	O	Not used, open
55	DIR 1	O	Direction indicator signal of deck 1
56	FINH 1	I	Deck 1 Forward Rec. Inh. switch select terminal
57	HSP 1	O	Deck 1 Motor speed control signal • "L" level when normal speed (X1). • "H" level when high speed (X2).
58	SOL 1	O	Deck 1 Solenoid control signal • "H" level when solenoid is on mode. • "L" level when solenoid is off mode.
59	MOTOR 1	O	Deck 1 Motor control signal • "H" level when motor is on mode. • "L" level when motor is off mode.
60	MODE 2	I	Deck 2 mechanism mode switch select terminal
61	HALF 2	I	Deck 2 cassette half detection switch • "L" level in half detection switch in on mode. • "H" level in half detection switch in off mode.
62	HSP 2	O	Deck 2 Motor speed control signal • "H" level when normal speed (X1). • "L" level when high speed (X2).
63	SOL 2	O	Deck 2 Solenoid control signal • "H" level when solenoid is on mode. • "L" level when solenoid is off mode.
64	MOTOR 2	O	Deck 2 Motor control signal • "H" level when motor is on mode. • "L" level when motor is off mode.

PRINTED CIRCUIT BOARDS





**■ TERMINAL GUIDE OF IC's,
TRANSISTORS AND DIODES**

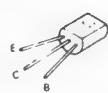


AN7384	16 Pin	AN7351K	42 Pin
AN6888	18 Pin	M50746-166SP	64 Pin
TEA0665	28 Pin		

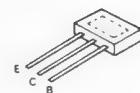


DN6851A 3 Pin

2SJ164PQRTA

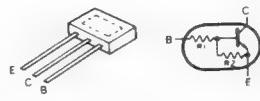


2SB621ARSTA
2SD592QRSTA

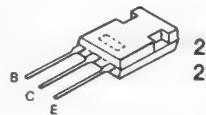
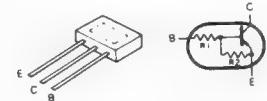


2SA1309AQSTA
2SC3311AQSTA
2SD1450RSTTA
2SB1030RSTTA

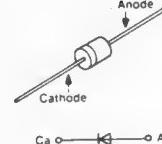
DTC114ESTP



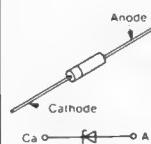
DTA114ESTP



2SB1357DEFTA
2SD2037EFTA



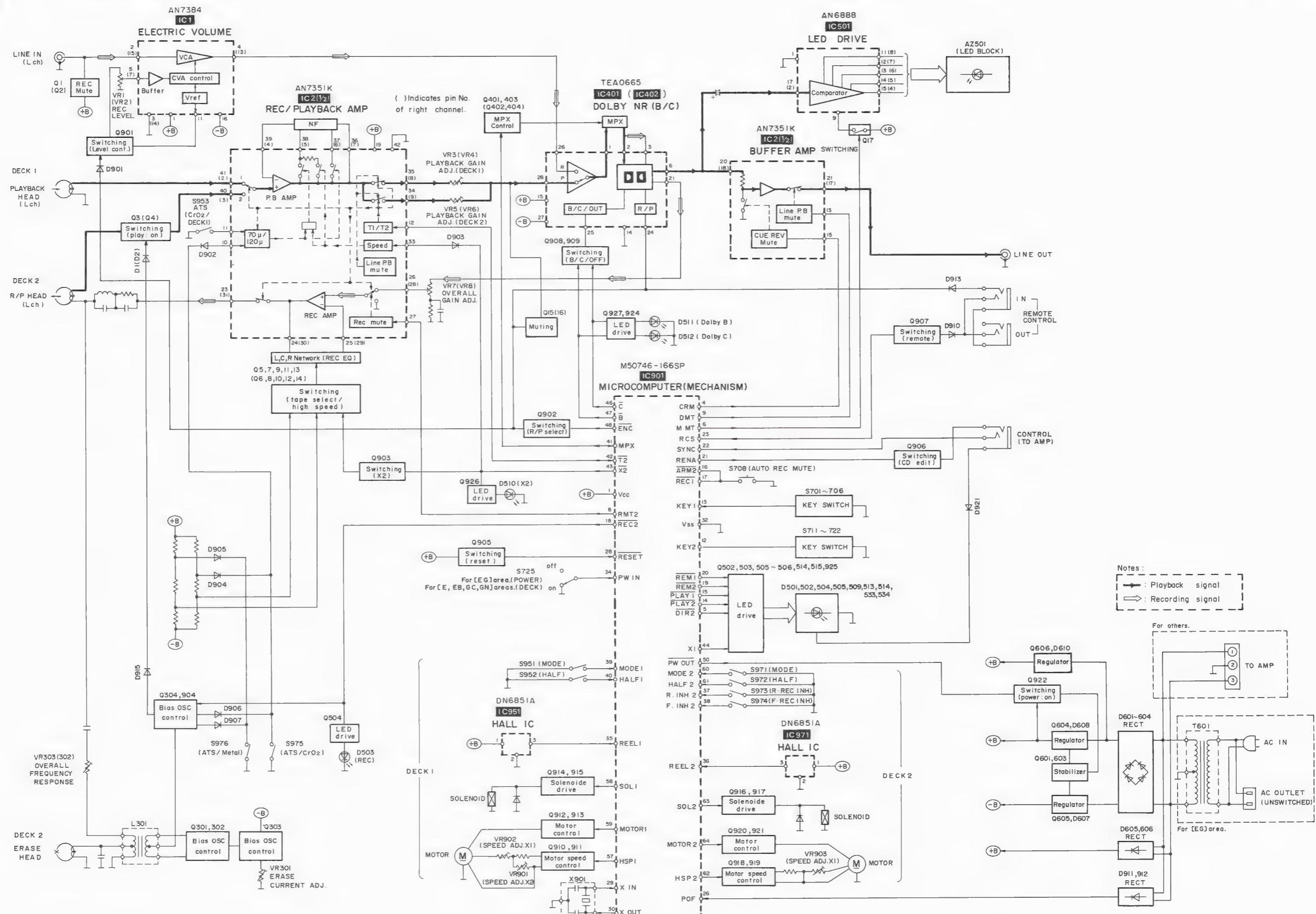
MA167TA
MA165TA
1SR35200TB
1SS133



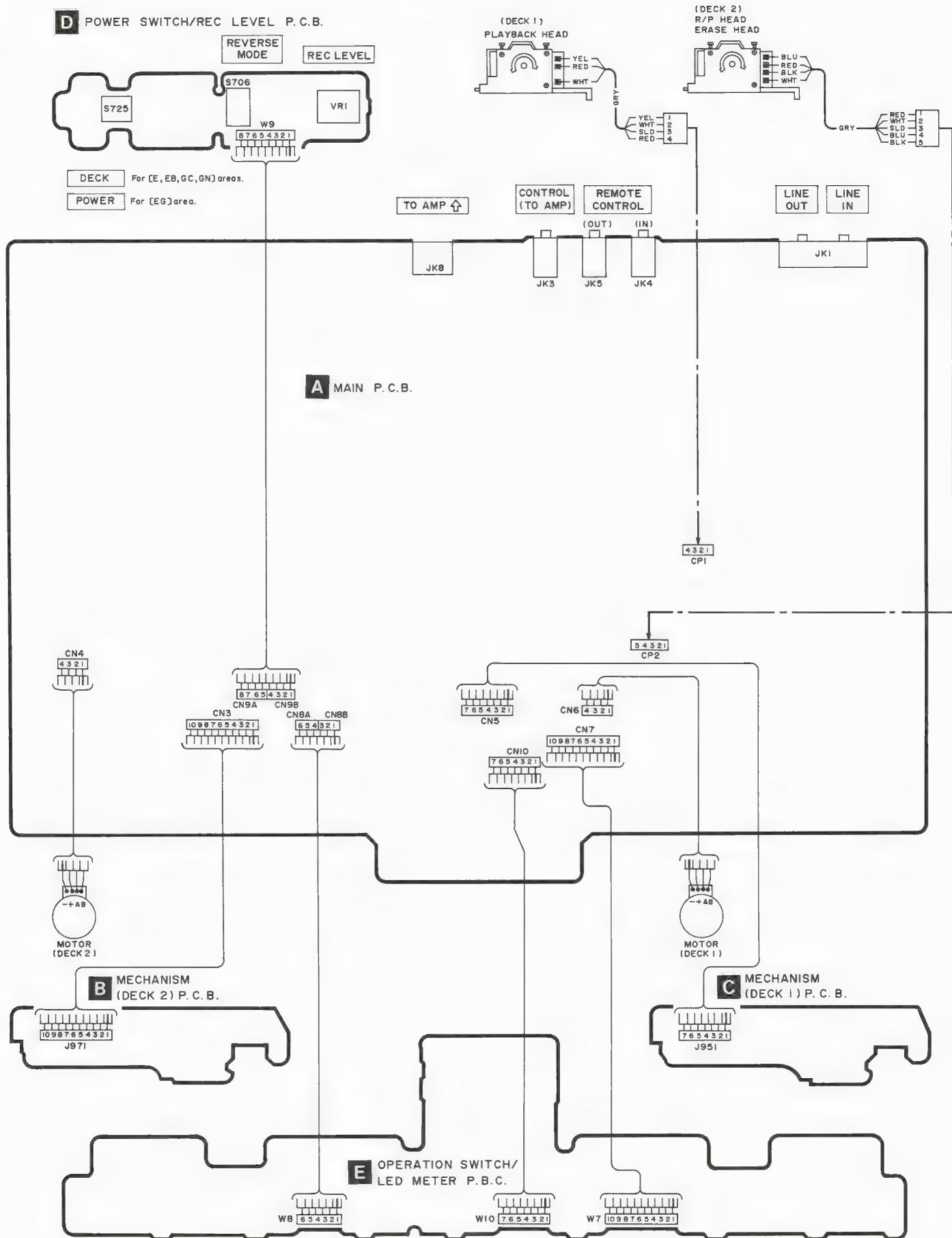
MA4062LTA
MA4082MTA
MA4051MTA



■ BLOCK DIAGRAM



■ WIRING CONNECTION DIAGRAM



REPLACEMENT PARTS LIST

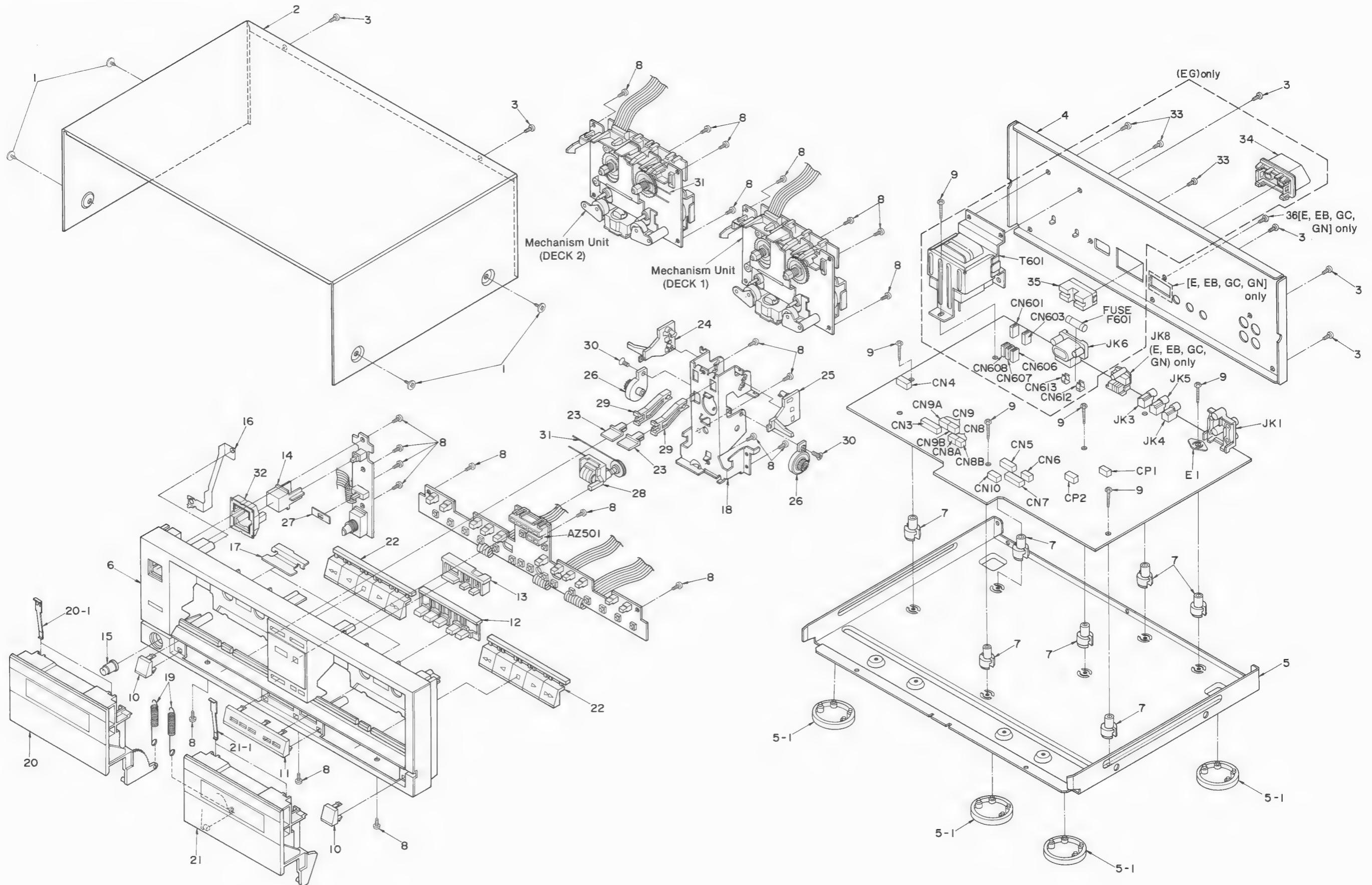
Notes : * Important safety notice:

Components identified by **Δ** mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

- * The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

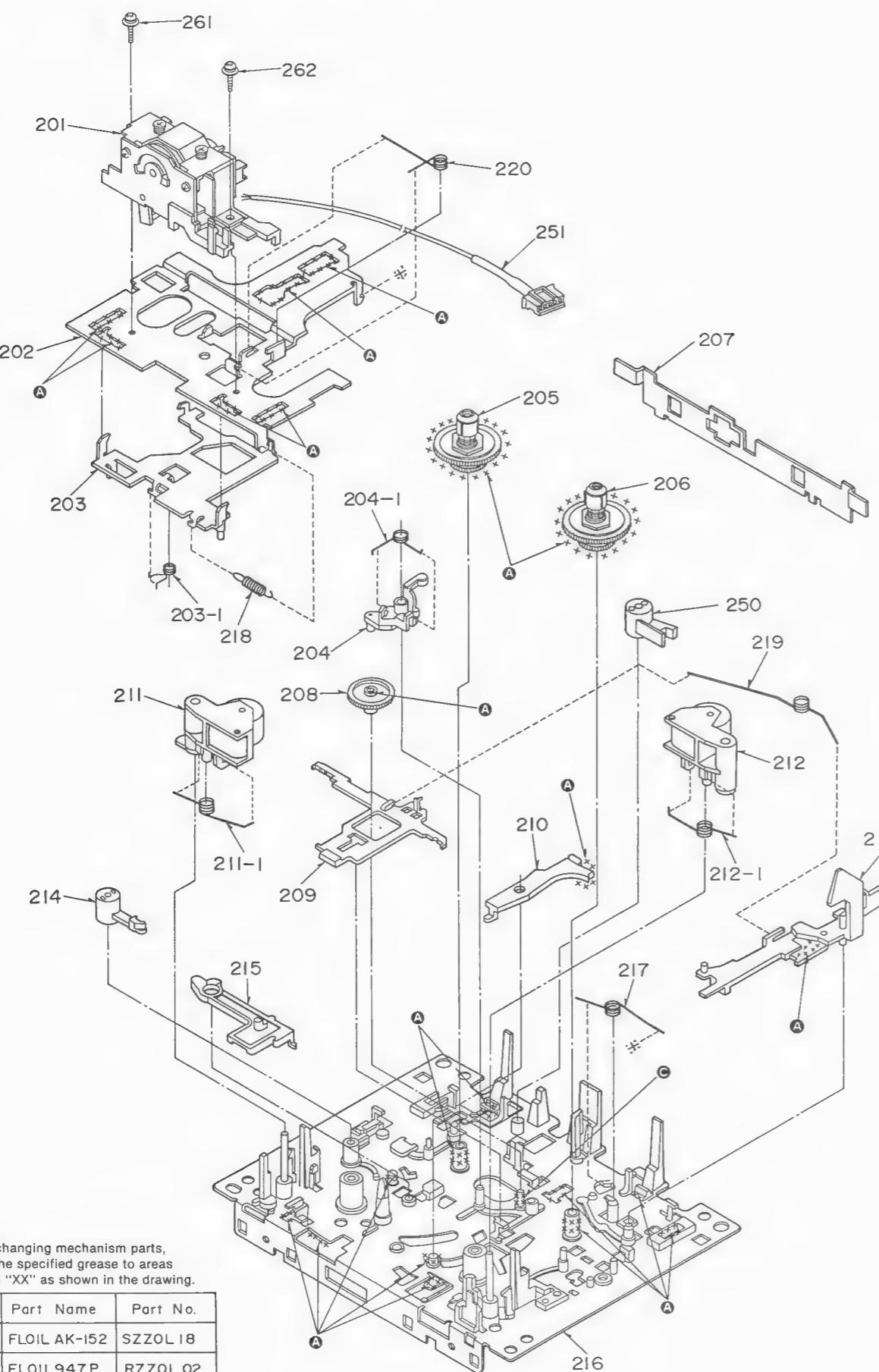
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		P1	RPG0463	CARTON BOX	
1	RHD30007	SCREW		P2	RPN0333A	RAD (A)	
2	RKM0024-2K	CABINET		P3	RPN0333B	RAD (B)	
3	XTBS3+JFZ1	SCREW		P4	RPN0333C	RAD (C)	
4	RGR0014A-F	REAR PANEL	(E, EB, GC, GN)	P5	RPN0333D	RAD (D)	
4	RGR0014B-D	REAR PANEL	(EG)	P6	SPSD152	PAD, ACCESSORIES	
5	RFKJSX301E-K	BOTTOM BOARD ASS' Y		P7	SPP753	PROTECTION COVER	
5-1	RKA0011	FOOT				ACCESSORIES	
6	RFKGSX301EK	FRONT PANEL ASS' Y	(E, EB, GC, GN)	A1	RQF0581	INSTRUCTION MANUAL UNIT	(EB)
6	RFKGSX301EGK	FRONT PANEL ASS' Y	(EG)	A1	RQF0582	INSTRUCTION MANUAL UNIT	(E)
7	SHE187-2	HOLDER		A1	RQF0583	INSTRUCTION MANUAL UNIT	(EG)
8	XTB3+10JFZ	SCREW		A1	RQF0584	INSTRUCTION MANUAL UNIT	(GC)
9	XTB3+20JFZ	SCREW		A1	RQF0585	INSTRUCTION MANUAL UNIT	(GN)
10	RGK0073	ORNAMENT, BUTTON (B)		A1-1	RFKSUX301E-K	INSTRUCTION MANUAL ASS' Y	(E)
11	RGK0077	ORNAMENT, BUTTON (A)		A1-1	RQT0472-B	INSTRUCTION MANUAL	(EB, GN)
12	RGU0088	BUTTON, DOLBY		A1-1	RQT0473-G	INSTRUCTION MANUAL	(GC)
13	RGU0089	BUTTON, EDIT		A1-1	RQT0475-D	INSTRUCTION MANUAL	(EG)
14	RGU0090	BUTTON, POWER		A1-2	RQA0013	WARRANTY CARD	(E, EG)
15	RGW0015	KNOB, REC LEVEL		A1-2	SQX7186	WARRANTY CARD	(GN)
16	RJR0015	GND PLATE		A1-3	RQCB0169	SERVICENTER LIST	(E, EG, GC, GN)
17	RMA0052-1	BRACKET		A1-4	RQCS0009	CAUTION NOTE (FTZ)	(EG)
18	RMA0064-2	EJECT BRACKET		A2	SFDAC05E03	POWER CORD	(EG) △
19	RMB0042-2	EJECT SPRING		A3	SJP2249-3	STEREO CONNECTION CABLE	
20	RYF0067	CASSETTE HOLDER (DECK2)		A4	SJP2257T	L-TYPE CABLE	
20-1	QBP2006A	SPRING, TAPE PRESSURE		A5	REX0036	FLAT CABLE (TO AMPLIFIER)	(E, EB, GC, GN)
21	RYP0069	CASSETTE HOLDER (DECK1)					
21-1	QBP2006A	SPRING, TAPE PRESSURE					
22	SBCF13A	BUTTON, OPERATION					
23	SBC928	BUTTON, EJECT					
24	SHEF1	EJECT LEVER (L)					
25	SHEF2-1	EJECT LEVER (R)					
26	SMQSX911-KE	DAMPER GEAR ASS' Y					
27	SHR6076	ORNAMENT					
28	SJN29	TAPE COUNTER					
29	SUBF3	EJECT ROD					
30	XTS3+8J	SCREW					
31	SMQ20024	COUNTER BELT					
32	RMRO109	BUTTON GUIDE					
33	XTBS3+8JFZ1	SCREW	(EG)				
34	RJS1A4902-A	AC OUTLET COVER	(EG)				
35	RJS1A4902-B	AC OUTLET	(EG) △				
36	XTBS3+8JFZ1	SCREW	(E, EB, GC, GN)				
		PACKING MATERIAL					

■ CABINET PARTS LOCATION



■ MECHANICAL PARTS LOCATION

(DECK 2: Front view)

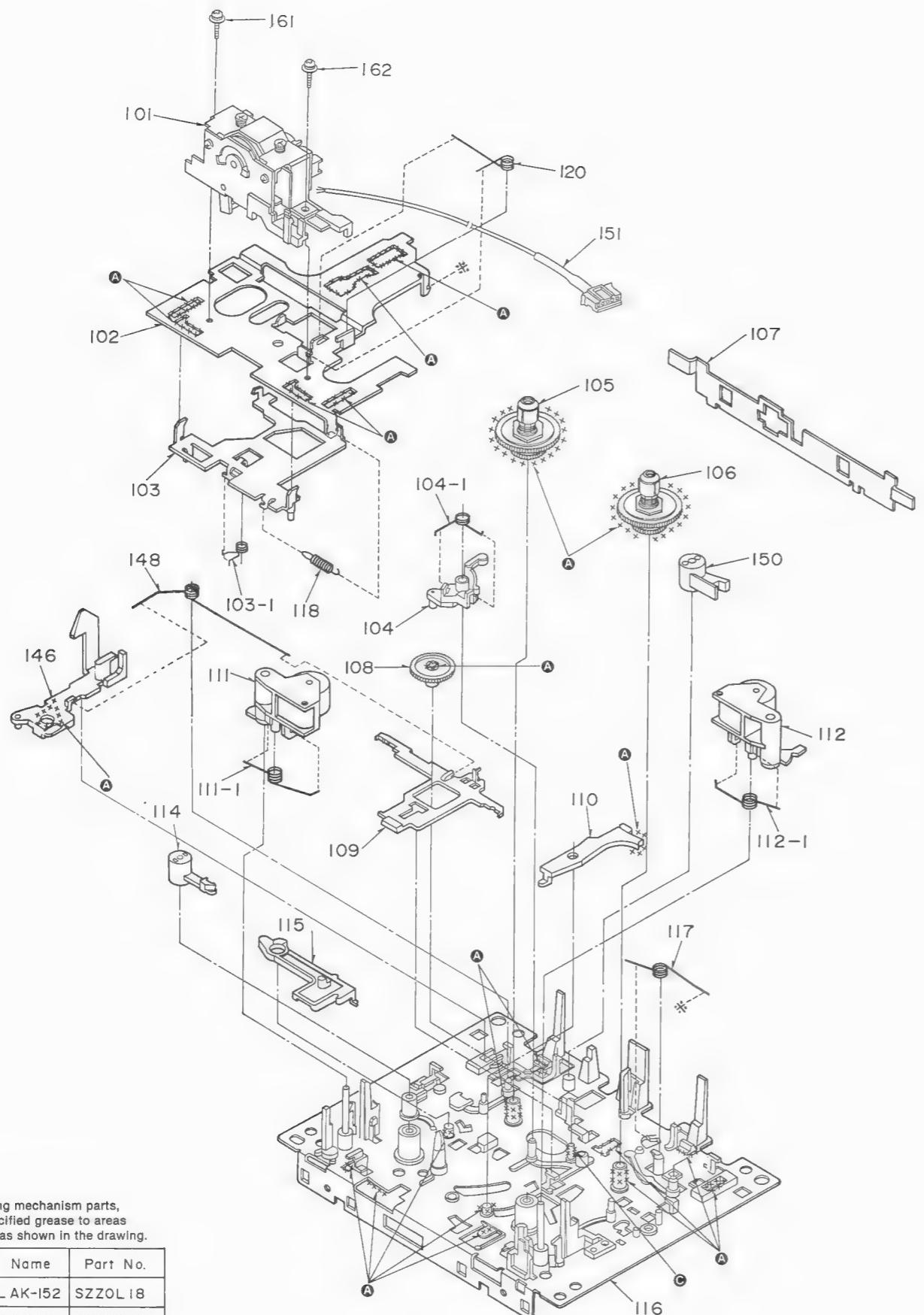


REPLACEMENT PARTS LIST

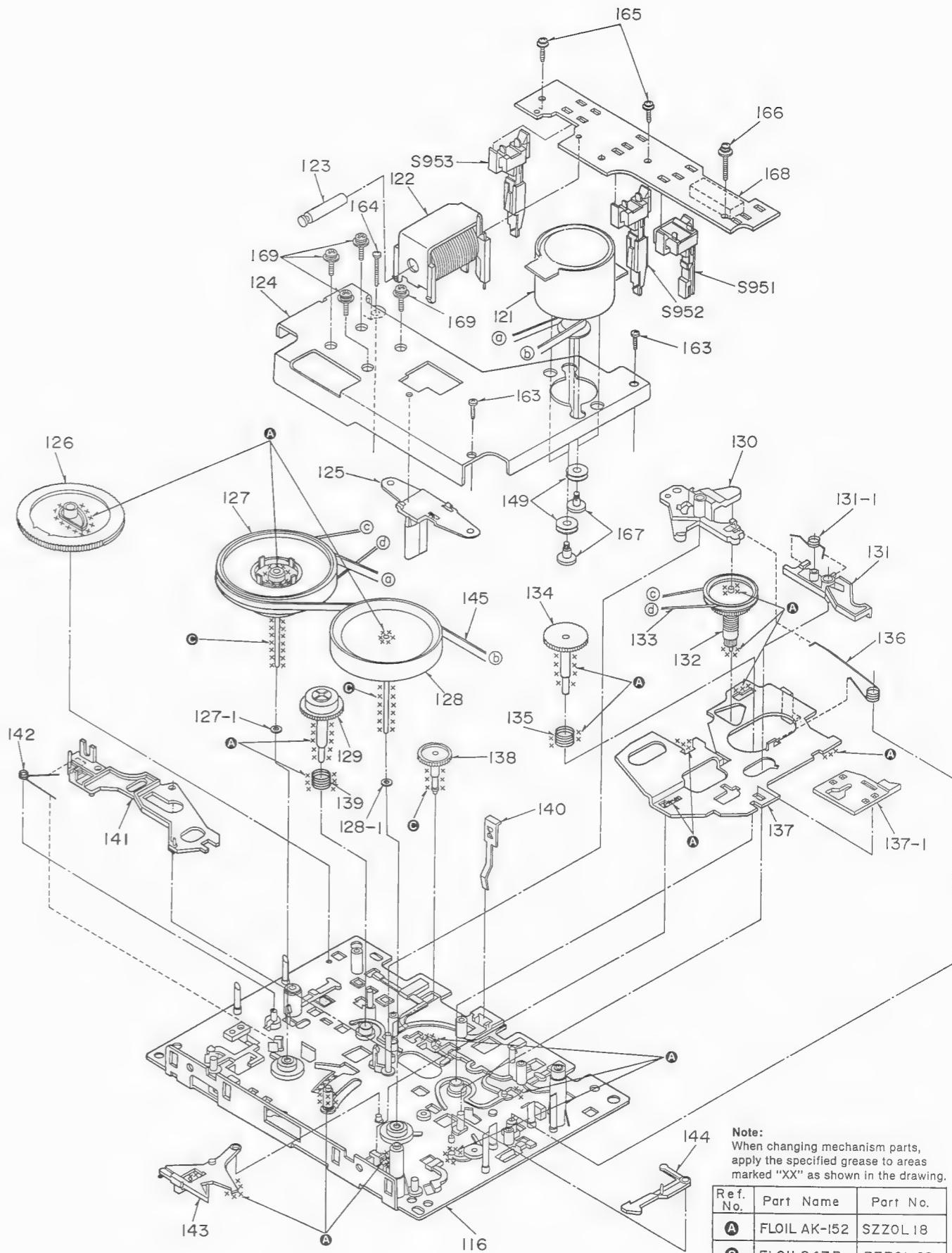
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
				241	RUB514Z	LEVER	
		MECHANISM PARTS LIST		242	RUW147ZA	SPRING	
DECK2				243	RUB515Z	LEVER	
201	RXQ0019	HEAD BLOCK (REC./PLAYBACK)		244	RUB509ZA	LEVER	
202	RUA793Z	HEAD BASE		245	RDV108ZA	CAPSTAN BELT	
203	RZLAR300	ROD		249	RHG3032Z	RUBBER CUSHION	
203-1	RUW143Z	SPRING		250	RNL972A	DAMPER ARM	
204	IUB0089ZA	ARM		251	REX0059	LEAD WIRE BLOCK	
204-1	RUW148ZA	SPRING		261	XTW2+6L	SCREW	
205	IDM0018ZA	REEL TABLE (R)		262	XTW2+8L	SCREW	
206	IDM0017ZA	REEL TABLE (F)		263	XTN26+7J	SCREW	
207	RUB502Z	LEVER		264	XTN26+16F	SCREW	
208	RDG5772Z	GEAR		265	XTW2+8S	SCREW	
209	RUB508ZA	BRAKE ROD		266	XYC2+JF16	SCREW	
210	RUB506Z	LEVER		267	QHQ1303	SCREW	
211	IUB0088ZA	ARM (R)		268	RJS10T7ZA	CONNECTOR (10P), J971	
211-1	RUW141Z	SPRING		269	XYN26+F6	SCREW	
212	IUB0087ZA	ARM (F)					
212-1	RUW140Z	SPRING					
213	RUB507Z	EJECT ROD (R)					
214	RNL1Z	DAMPER ARM					
215	RUB503Z	MAIN LEVER					
216	RZUSX980	CHASSIS					
217	RUW142ZA	SPRING					
218	RUD105Z	SPRING					
219	RUW144ZA	SPRING					
220	RUW139ZA	SPRING					
221	RFM133ZA	DC MOTOR					
222	IUE0015ZA	PLUNGER					
223	RUB428Z	MOVING IRON CORE					
224	RUL1030ZC	ANGLE					
225	RMD5014Z	ANGLE					
226	RDG5927ZA	GEAR					
227	IDW0037ZA	FLYWHEEL (F)					
227-1	RNW139ZA	WASHER					
228	IDW0038ZA	FLYWHEEL (R)					
228-1	RNW138Z	WASHER					
229	IDG0006ZA	REEL TABLE GEAR					
230	RUB513Z	ARM					
231	IUB0091ZA	LEVER					
231-1	RUW146ZA	SPRING					
232	IDR0011ZA	MAIN PULLEY					
233	RDV90ZB	BELT					
234	RDG5769ZA	REEL TABLE GEAR					
235	RUQ10Z	SPRING					
236	RUW145ZA	SPRING					
237	IUB0090ZA	ROD					
237-1	RUB512Z	ROD					
238	RDG5773ZA	GEAR					
239	RUQ30Z	SPRING					
240	RUS609Z	TAPE PRESSURE SPRING					

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS LIST		143	RJB515Z	LEVER	
				144	RUB509ZA	LEVER	
DECK1				145	RDV97ZA	CAPSTAN BELT	
101	RXQ0021	HEAD BLOCK (PLAYBACK)		146	RJB541ZB	EJECT ROD (L)	
102	RUA793ZD	HEAD BASE		148	RJW167ZA	SPRING	
103	RZLAR300	ROD		149	RHG3032Z	RUBBER CUSHION	
103-1	RWU143Z	SPRING		150	RNL180ZA	DAMPER ARM	
104	1UB0089ZA	ARM		151	REX0061	LEAD WIRE BLOCK	
104-1	RWU148ZA	SPRING		161	XTW2+6L	SCREW	
105	1DM0018ZA	REEL TABLE (R)		162	XTW2+8L	SCREW	
106	1DM0017ZA	REEL TABLE (F)		163	XTN26+7J	SCREW	
107	RUB502Z	LEVER		164	XTN26+16F	SCREW	
108	RDG5772Z	GEAR		165	XTW2+8S	SCREW	
109	RUB508ZA	BRAKE ROD		166	XYC2+JF16	SCREW	
110	RUB506Z	LEVER		167	QHQ1303	SCREW	
111	1UB0088ZA	ARM (R)		168	RJS7T7ZA	CONNECTOR (7P), J951	
111-1	RWU141Z	SPRING		169	XYN26+F6	SCREW	
112	1UB0087ZA	ARM (F)					
112-1	RWU140Z	SPRING					
114	RNL1Z	DAMPER ARM					
115	RUB503Z	MAIN LEVER					
116	RZUSX980	CHASSIS					
117	RWU142ZA	SPRING					
118	RUD105Z	SPRING					
120	RWU139ZA	SPRING					
121	RFM133ZA	DC MOTOR					
122	IUE0015ZA	PLUNGER					
123	RUB428Z	MOVING IRON CORE					
124	RUL1030ZC	ANGLE					
125	RMD5014Z	ANGLE					
126	RDG5927ZA	GEAR					
127	1DW0037ZA	FLYWHEEL (F)					
127-1	RNW139ZA	WASHER					
128	1DW0038ZA	FLYWHEEL (R)					
128-1	RNW138Z	WASHER					
129	1DG0006ZA	REEL TABLE GEAR					
130	RUB513Z	ARM					
131	1UB0091ZA	LEVER					
131-1	RWU146ZA	SPRING					
132	1DR0011ZA	MAIN PULLEY					
133	RDV90ZB	BELT					
134	RDG5769ZA	REEL TABLE GEAR					
135	RUQ10Z	SPRING					
136	RWU145ZA	SPRING					
137	1UB0090ZA	ROD					
137-1	RUB512Z	ROD					
138	RDG5773ZA	GEAR					
139	RUQ30Z	SPRING					
140	RUS609Z	TAPE PRESSURE SPRING					
141	RUB514Z	LEVER					
142	RWU147ZA	SPRING					

■ MECHANICAL PARTS LOCATION
(DECK 1: Front view)



(DECK 1: Rear view)



REPLACEMENT PARTS LIST

Notes : * Important safety notice:
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* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks	
		INTEGRATED CIRCUIT(S)		Q921, 922	DTC114ESTP	TRANSISTOR		
IC1	AN7384-B	ELECTRIC VOLUME		Q924-926	DTA114ESTP	TRANSISTOR		
IC2	AN7351K	PLAYBACK/REC AMP				DIODE (S)		
IC401, 402	TEA0665	DOLBY B/C NR		D1, 2	MA167TA	DIODE		
IC501	AN6888	L. E. D. METER DRIVE		D501, 502	LN346GP-C	DIODE		
IC901	M50746-166SP	MICROCOMPUTER		D503	LN846RP-C	DIODE		
IC951	DN6851A	HALL		D504, 505	LN346GP-C	DIODE		
IC971	DN6851A	HALL		D511-514	LN346GP-C	DIODE		
		TRANSISTOR(S)		D515, 516	MA165TA	DIODE		
Q1-4	2SJ164PQRTA	TRANSISTOR		D533, 534	LN346GP-C	DIODE		
Q5-8	2SA1309AQSTA	TRANSISTOR		D535, 536	MA165TA	DIODE		
Q9-14	2SC3311AQSTA	TRANSISTOR		D601-606	1SR35200TB	DIODE	Δ	
Q15, 16	2SD1450RSTTA	TRANSISTOR		D607, 608	MA4082MTA	DIODE		
Q17	DTA114ESTP	TRANSISTOR		D610	MA4062LTA	DIODE		
Q301, 302	2SC3311AQSTA	TRANSISTOR		D612	MA165TA	DIODE		
Q303	ZSB621ARSTA	TRANSISTOR		D901-907	MA165TA	DIODE		
Q304	ZSD592QRSTA	TRANSISTOR		D908	1SR35200TB	DIODE	Δ	
Q401-404	2SC3311AQSTA	TRANSISTOR		D909	MA165TA	DIODE		
Q502-506	DTA114ESTP	TRANSISTOR		D910	MA165TA	DIODE		
Q513-515	DTA114ESTP	TRANSISTOR		D911, 912	MA165TA	DIODE	Δ	
Q601	2SA1309AQSTA	TRANSISTOR	Δ	D913	MA165TA	DIODE		
Q603	2SC3311AQSTA	TRANSISTOR	Δ	D914	MA4051MTA	DIODE		
Q604	2SD2037EFTA	TRANSISTOR		D915, 916	MA165TA	DIODE		
Q605	ZSB1357EFTA	TRANSISTOR		D921	MA165TA	DIODE		
Q606	ZSD592QRSTA	TRANSISTOR		D951	ISS133	DIODE		
Q901	2SC3311AQSTA	TRANSISTOR		D971	ISS133	DIODE		
Q902, 903	DTA114ESTP	TRANSISTOR			I. C. PROTECTOR(S)			
Q904	ZSB1030RSTTA	TRANSISTOR			ICP1	SRUN10T	I. C. PROTECTOR	(EB, GN)
Q905	2SC3311AQSTA	TRANSISTOR				VARIABLE RESISTOR(S)		
Q906	DTC124ESTP	TRANSISTOR			VR1	EVJ02FF01B15	REC. LEVEL CONTROL	
Q907	2SA1309AQSTA	TRANSISTOR			VR3-6	EVNDXA00B24	PLAYBACK GAIN ADJ.	
Q908, 909	DTA114ESTP	TRANSISTOR			VR7, 8	EVNDXA00B14	OVERALL GAIN ADJ.	
Q910	DTC114ESTP	TRANSISTOR			VR301	EVNDXA00B53	ERASE CURRENT ADJ.	
Q911	2SA1309AQSTA	TRANSISTOR			VR302, 303	EVNDXA00B15	OVERALL FREQUENCY ADJ.	
Q912	ZSB621ARSTA	TRANSISTOR	Δ		VR901-903	EVNDXA00BS3	TAPE SPEED ADJ.	
Q913	DTC114ESTP	TRANSISTOR				COIL(S)		
Q914	ZSB1030RSTTA	TRANSISTOR	Δ		L1, 2	SLQX303-1KT	COIL	
Q915	DTC114ESTP	TRANSISTOR			AZ501	LN078479P	L. E. D. BLOCK UNIT	(D509, 510, 520, 522,
Q916	ZSB1030RSTTA	TRANSISTOR	Δ				524, 526, 528)	
Q917	DTC114ESTP	TRANSISTOR			L3, 4	SLQX272-1YT	COIL	
Q918	2SA1309AQSTA	TRANSISTOR						
Q919	DTC114ESTP	TRANSISTOR			L301	SL0894-K	COIL	
Q920	ZSB621ARSTA	TRANSISTOR	Δ					

RESISTORS & CAPACITORS

Notes : * Capacity value are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(ohm), 1M=1,000k(ohm)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R427, 428	ERDS2TJ222T	1/4W 2.2K	R902	ERDS2TJ563T	1/4W 56K			
R429, 430	ERDS2TJ512T	1/4W 5.1K	R903	ERDS2TJ393T	1/4W 39K			
R501	ERDS2TJ104T	1/4W 100K	R904	ERDS2TJ152T	1/4W 1.5K			
R503	ERDS2TJ562T	1/4W 5.6K	R905	ERDS2TJ222T	1/4W 2.2K			
R504	ERDS2TJ560T	1/4W 56 Δ	R906	ERDS2TJ103T	1/4W 10K			
R506-510	ERDS2TJ391T	1/4W 390	R907	ERDS2TJ563T	1/4W 56K			
R514-520	ERDS2TJ391T	1/4W 390	R908-910	ERDS2TJ103T	1/4W 10K			
R521	ERDS2TJ331T	1/4W 330	R911	ERDS2TJ392T	1/4W 3.9K			
R1, 2	ERDS2TJ394T	1/4W 390K	R912	ERDS2TJ222T	1/4W 2.2K			
R3, 4	ERDS2TJ393T	1/4W 39K	R913	ERDS2TJ271T	1/4W 270			
R5, 6	ERDS2TJ183T	1/4W 18K	R914	ERDS2TJ681T	1/4W 680			
R7, 8	ERDS2TJ225T	1/4W 2.2M	R915	ERDS2TJ683T	1/4W 68K			
R9, 10	ERDS2TJ332T	1/4W 3.3K	R916	ERDS2TJ472T	1/4W 4.7K			
R11, 12	ERDS2TJ561T	1/4W 560	R917, 918	ERDS2TJ103T	1/4W 10K			
R13, 14	ERDS2TJ332T	1/4W 3.3K	R919	ERDS2TJ471T	1/4W 470			
R19, 20	ERDS2TJ101T	1/4W 100	R920-922	ERDS2TJ103T	1/4W 10K			
R21, 22	ERDS2TJ104T	1/4W 100K	R923	ERDS2TJ102T	1/4W 1K			
R23, 24	ERDS2TJ101T	1/4W 100	R924	ERDS2TJ103T	1/4W 10K			
R25, 26	ERDS2TJ225T	1/4W 2.2M	R925	ERDS2TJ273T	1/4W 27K			
R27, 28	ERDS2TJ820T	1/4W 82	R926	ERDS2TJ102T	1/4W 1K			
R29, 30	ERDS2TJ103T	1/4W 10K	R927	ERDS2TJ223T	1/4W 22K			
R31, 32	ERDS2TJ273T	1/4W 27K	R928	ERDS2TJ562T	1/4W 5.6K			
R33, 34	ERDS2TJ183T	1/4W 18K	R929	ERDS2TJ272T	1/4W 2.7K			
R35, 36	ERDS2TJ474T	1/4W 470K	R930, 931	ERDS2TJ472T	1/4W 4.7K			
R37, 38	ERDS2TJ227T	1/4W 2.7K	R932	ERDS2TJ392T	1/4W 3.9K			
R43, 44	ERDS2TJ103T	1/4W 10K	R933	ERDS2TJ472T	1/4W 4.7K			
R45, 46	ERDS2TJ223T	1/4W 22K	R934	ERDS2TJ105T	1/4W 1M			
R47, 48	ERDS2TJ472T	1/4W 4.7K	R935	ERDS2TJ182T	1/4W 1.8K			
R49, 50	ERDS2TJ102T	1/4W 1K	R936	ERDS2TJ103T	1/4W 10K			
R51, 52	ERDS2TJ330T	1/4W 33	R937	ERDS2TJ472T	1/4W 4.7K			
R53-56	ERDS2TJ272T	1/4W 2.7K	R938, 939	ERDS2TJ103T	1/4W 10K			
R57, 58	ERDS2TJ103T	1/4W 10K	R940-942	ERDS2TJ472T	1/4W 4.7K			
R59, 60	ERDS2TJ332T	1/4W 3.3K	R943	ERDS2TJ223T	1/4W 22K			
R65	ERDS2TJ332T	1/4W 3.3K	R944	ERDS2TJ333T	1/4W 33K			
R66	ERDS2TJ682T	1/4W 6.8K	R945	ERDS2TJ223T	1/4W 22K			
R67	ERDS2TJ223T	1/4W 22K	R946, 947	ERDS2TJ102T	1/4W 1K			
R701	ERDS2TJ821T	1/4W 820	R948	ERDS2TJ184T	1/4W 180K			
R702	ERDS2TJ102T	1/4W 1K	R949	ERDS2TJ103T	1/4W 10K			
R703	ERDS2TJ122T	1/4W 1.2K	R950	ERDS2TJ332T	1/4W 3.3K			
R704	ERDS							

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks			
R961	ERDS2TJ561T	1/4W 560	C413, 414	ECFR1C473JR	16V 0.047U			
R962	ERDS2TJ103T	1/4W 10K	C415, 416	ECQV1H224JZ3	50V 0.22U			
R963	ERDS2TJ432	1/4W 4.3K	C417-420	ECEA1HKR68B	50V 0.68U			
R964	ERDS2TJ184T	1/4W 180K	C421, 422	ECQV1H224JZ3	50V 0.22U			
R965	ERDS2TJ103T	1/4W 10K	C423, 424	ECFR1C473JR	16V 0.047U			
R966	ERDS2TJ223T	1/4W 22K △	C425, 426	ECEA1CK100B	16V 10U			
R967	ERDS2TJ821T	1/4W 820	C427, 428	ECFR1C472JR	16V 4700P			
R968, 969	ERDS2TJ472T	1/4W 4.7K	C429, 430	ECFR1C103JR	16V 0.01U			
R971	ERDS2TJ182T	1/4W 1.8K	C431, 432	ECEA1CK100B	16V 10U			
R973	ERDS2TJ561T	1/4W 560	C501	ECEA1HK2R2B	50V 2.2U			
R974	ERDS2TJ103T	1/4W 10K	C503	ECBT1E103ZF5	25V 0.01U △			
			C601	ECKD2H682PE	500V 6800P			
		CAPACITORS	C602, 603	ECEA1EU102B	25V 1000U △			
			C604, 605	ECKR1H103ZF5	50V 0.01U			
C1-3	ECEA1HK010B	50V 1U	C606, 607	ECEA1AU221B	10V 220U			
C5, 6	ECEA1CK220B	16V 22U	C608	ECKR1H103ZF5	50V 0.01U			
C7-10	ECBT1H561KB5	50V 560P	C610, 611	ECEAOJU102B	6.3V 1000U			
C11, 12	ECBT1H102KB5	50V 1000P	C612	ECEA1EU222E	25V 2200U △			
C13, 14	ECEAOJU101B	6.3V 100U	C901	ECEAOJU222B	6.3V 2200U			
C15, 16	ECQB1H682JZ3	50V 6800P	C903	ECEA1HK010B	50V 1U			
C17-20	ECEA1EK4R7B	25V 4.7U	C904	ECEA1EK4R7B	25V 4.7U			
C21	ECEAOJU101B	6.3V 100U	C907	ECKR1H103ZF5	50V 0.01U			
C23-26	ECEA1HK010B	50V 1U	C909	ECKR1H103ZF5	50V 0.01U			
C27, 28	ECBT1H561KB5	50V 560P						
C29, 30	ECKD2H101KB	500V 100P						
C31, 32	ECCD1H181KB	50V 180P						
C33, 34	ECEA1HKR47B	50V 0.47U						
C35, 36	ECFR1C392JR	16V 3900P						
C37, 38	ECFR1C183JR	16V 0.018U						
C39, 40	ECFR1C822JR	16V 8200P						
C41, 42	ECFR1C273JR	16V 0.027U						
C45, 46	ECKR1H103ZF5	50V 0.01U						
C49, 50	ECEA1CK100B	16V 10U						
C53, 54	ECFR1C183JR	16V 0.018U						
C55	ECBT1H102KB5	50V 1000P						
C57, 58	ECEA1CU470B	16V 47U						
C301	ECQP1153JZ	50V 0.015U						
C302	ECEA1CU221B	16V 220U						
C303	ECKR1H392KB5	50V 3900P						
C304, 305	ECFR1E222KAY	25V 2200P						
C306	ECFR1E682KAY	25V 6800P						
C307, 308	ECCD1H221KB	50V 220P						
C309	ECKR1H103ZF5	50V 0.01U						
C401, 402	ECCR1H820K5	50V 82P						
C403, 404	ECEA1EK4R7B	25V 4.7U						
C405, 406	ECKD1H122KB	50V 1200P						
C407, 408	ECKD1H152KB	50V 1500P						
C409	ECFR1C392JR	16V 3900P (EG)						
C409	ECFR1C472JR	16V 4700P (E, EB, GC, GN)						
C410	ECFR1C472JR	16V 4700P						
C411, 412	ECEA1CK100B	16V 10U						

Cassette Deck

DEUTSCH

**RS-X101
RS-X301
RS-TR265**

MESSUNGEN UND EINSTELL METHODEN**Meßinstrumente**

- Elektronisches Voltmeter (EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

Tonkopf-Azimuteinstellung (Deck 2/1)

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8kHz, -20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajouscche wellenfigur sich, wie abgebildet, 0 Grad nähert.

Anmerkung:

When L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2. Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

Prüfung des Pegelunterschiedes bei Vorwärts- und Rückwärtsdrehung

3. Den Abschnitt für Verstärkungseinstellung (315Hz, 0dB) des Prüfbandes (QZZCFM) wiedergeben und sicherstellen, daß der Pegelunterschied bei Vorwärts- und Rückwärtsdrehung kleiner als 1dB ist.
4. Nach der Einstellung Schrauben-Sicherungsmittel an die Azimuth-Einstellschraube geben.

Bandgeschwindigkeits-einstellung (Deck 2/1)**Normale Geschwindigkeit**

1. Den Wahlschalter für Editier-Bandgeschwindigkeit auf "x1" stellen.
2. Den mittleren Teil des Prüfbandes (QZZCWAT) wiedergeben.
3. Deck 1 = VR902 und Deck 2=VR903 so einstellen, daß

Hohe Geschwindigkeit

4. Den Wahlschalter für Editier-Bandgeschwindigkeit auf "x2" stellen und den Prüfmoduspunkt und GND verbinden.
5. Den mittleren Teil des Prüfbandes (QZZCWAT) wiedergeben.
6. Deck 1 = VR901 so einstellen, daß der Ausgang dem Sollwert entspricht.

Einstellung der Wiedergabeverstärkungsregelung (Deck 2/1)

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315Hz, 0dB) ab.
2. Stellen Sie VR3 (L-K) [[VR4 (R-K)]] für Deck 1 von VR5 (L-K) [[VR6 (R-K)]] für Deck 2 so ein, daß die Abgabe den Normwert erfüllt.

Wiedergabefrequenzaang (Deck 2/1)

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315Hz, 12,5kHz~63Hz, -20dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in Abb. 6 gezeigten Bereich liegt.

Löschstromeinstellung (Deck 2)

1. Die leere Metallband-Prüfkassette (QZZCRZ) einsetzen und das Gerät auf Aufnahmepause schalten.
2. VR301 so einstellen, daß der Ausgang zwischen TP3 und GND dem Sollwert entspricht.

Gesamtfrequenzgang (Deck 2)

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Geben Sie über einen Lautstärkeregler ein Bezugseingabesignal (1kHz, -24dB) ein.
3. Stellen Sie das Signal auf 20dB und justieren die Frequenz von 50Hz~10kHz.
4. Nehmen Sie das Wobbelsignal auf.
5. Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bazugsfrequenz (1kHz) in dem in Abb. 8 aufgezeichneten Bereich befindet.
6. Sollte das Signal nicht im Normbereich liegen, justieren Sie VR303 (L-K) und VR302 (R-K), so daß der Frequenzpegel mit der Norm übereinstimmt.
7. Wiederholen Sie die Schritte 2~6 und verwenden das CrO₂ Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 12.5kHz (50Hz~12.5kHz) angehoben.
8. Achten Sie darauf, daß sich der Frequenzpegel in dem in Abb. 9 aufgezeigten Bereich befindet.

Einstellung der Gesamtverstärkungsregelung (Deck 2)

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Betrieb.
2. Legen Sie ein Bezugseingabesignal (1kHz, -24dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4V ein.
3. Nehmen Sie das Eingabesignal auf.
4. Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
5. Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie VR7 (L-K) und VR8 (R-K).
6. Wiederholen Sie die Schritte 2~5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

FRANÇAIS

METHODES DES MEASURES ET REGLAGES

Appareils de mesure

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T. (Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Réglage Azimutal de la tête (Platine 2/1)

1. Faire jouer la portion du réglage de l'azimuth (8kHz, -20dB) de la bande d'essai (QZZCFM). Ajuster la vis de la mise au point azimutale jusqu'à ce que les sorties du canal de gauche et du canal de droite soient maximisées et que la forme d'onde de Lissajous, comme il est illustré, approche de 0 degré.

Nota:

Si le canal de gauche et canal de droite ne sont pas maximisés au même point, régler le point où les niveaux de chaque canal sont maximisés et égaux.

2. Effectuer le même réglage sur le mode d'audition.

Vérification de la différence de niveau pour les deux sens de rotation

3. Introduire une bande métal vierge prévue pour les essais (QZZCPZ) et vérifier que la différence de niveau pour les deux sens de rotation est inférieure à 1dB.
4. Après cela, mettre une goutte de vernis de blocage sur la vis de réglage de l'azimut.

Réglage de la vitesse de défilement Vitesse (Platine 2/1)

normal

1. Placer le sélecteur de vitesse d'édition sur la position "x1".
2. Lire la partie centrale de la bande d'essai (QZZCWAT).
3. Régler VR902 pour la platine 1 et VR901 pour la platine 2 de manière que la sortie ait la valeur standard.

Grande vitesse

4. Placer le sélecteur de vitesse d'édition sur la position "x2" et relier le point de test et la masse (GND).
5. Lire la partie centrale de la bande d'essai (QZZCWAT).
6. Régler VR901 pour la platine 1 de manière que la sortie ait la valeur standard.

Réglage de L'amplification de Lecture (Platine 2/1)

1. Faire jouer la partie réglée de l'amplification (315Hz, 0dB) de la bande d'essai (QZZCFM).
2. Régler la platine 1: VR3 (canal de gauche) [[VR4 (canal de droite)]] et la platine 2: VR5 (canal de gauche) [[VR6 (canal de droite)]] de telle sorte que la sortie soit en deçà de la valeur standard.

Réponse en Fréquence de la Lecture (platine 2/1)

1. Faire jouer la partie de la réponse en fréquence (315Hz, 12.5kHz, -63Hz, -20dB) de la bande d'essai (QZZCFM).
2. S'assurer que la réponse en fréquence soit en deçà de la plage montrée dans la Fig. 6, à la fois pour le canal de gauche et le canal de droite.

Réglage du courant d'effacement (Platine 2)

1. Introduire une bande métal vierge prévue pour les essais (QZZCRZ) et régler l'appareil en mode de pause d'enregistrement.
2. Régler VR301 de manière que la sortie entre TP3 et GND ait la valeur standard.

Réponse en Fréquence Totale (Platine 2)

3. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
4. Appliquer un signal d'entrée de référence (1kHz, -24dB) par l'intermédiaire d'un atténuateur.
5. Diminuer le signal de 20dB et régler la fréquence de 50Hz~10kHz.
6. Enregistrer le balayage de fréquence.
7. Répéter les étapes 2~6 ci-dessus en utilisant la bande CrO₂ (QZZCRX) et la bande métallisée (QZZCRX) en augmentant la plage de fréquence à 12.5kHz (50Hz~12.5kHz).
8. S'assurer que le niveau soit en deçà de la plage montrée à la Fig. 8 en comparaison à la fréquence de référence (1kHz).

Réglage de L'amplification Totale (Platine 2)

9. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
10. Appliquer un signal d'entrée de référence (1kHz, -24dB). Diminuer la sortie de telle sorte que son niveau devienne de 0.4V.
11. Enregistrer ce signal d'entrée.
12. Faire jouer le signal enregistré à l'étape 3 ci-dessus, et s'assurer que la sortie en deçà de la valeur standard.
13. Si elle n'est pas en deçà de la valeur standard, régler VR7 (canal de gauche) et VR8 (canal de droite).
14. Répéter les étapes 2~5 ci-dessus jusqu'à ce que la sortie soit en deçà de la valeur standard.

ESPAÑOL

METODOS DE AJUSTE Y MEDIDA

Instrumento de medición

- EVM (Voltímetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF

- ATT (Atenuador)
- Voltímetro CC
- Resistor (600Ω)

Ajuste Azimutal de Cabeza (Platina 2/1)

1. Reproducir la porción de ajuste azimutal (8kHz, -20dB) de la cinta de prueba (QZZCFM). Variar el tornillo de ajuste azimutal hasta que las salidas del CH-I y CH-D se maximicen y forma de onda de lissajous, como ilustrado, se acerque a grado 0.

Nota:

Si CH-I y CH-D no son maximizados en el mismo punto, ajustar al punto donde los niveles de cada canal sean maximizados e igualados.

2. Efectuar el mismo ajuste en la modalidad de reproducción.

Ajuste de la Velocidad de la Cinta (Platina 2/1)

Velocidad normal

1. Lleve a "x1" el selector de la velocidad de la cinta de edición.
2. Reproduzca la sección central de la cinta de prueba (QZZCWAT).
3. Ajuste la platina 1 = VR902 y la platina 2 = VR903 de modo que la salida quede comprendida dentro de los valores estándares.

Ajuste de Ganancia de Reproducción (Platina 2/1)

1. Reproducir la porción ajustada de ganancia (315Hz, 0dB) de la cinta de prueba (QZZCFM).
2. Ajustar la Platina 1: VR3 (CH-I) [[VR4 (CH-D)]] y la Platina 2: VR5 (CH-I) [[VR6 (CH-D)]] de manera que la salida esté dentro del valor estándar.

Respuesta de Frecuencia de Reproducción (Platina 2/1)

1. Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12.5kHz~63Hz, -20dB) de la cinta de prueba (QZZCFM).
2. Asegurarse de que la respuesta de frecuencia esté dentro de la gama mostrada en la Fig. 6 para ambos CH-I y CH-D.

Ajuste de la Corriente de Borrado (Platina 2)

1. Inserte la cinta de prueba metálica en blanco (QZZCRZ) y ponga el aparato en la modalidad de pausa de grabación.
2. Regule VR301 de modo que la salida entre TP3 y GND esté dentro de los valores estándares.

Respuesta de Frecuencia Total (Platina 2)

1. Poner una cinta virgen normal (QZZCRA) y poner la unidad en la modalidad de Pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1kHz, -24dB) a través de un atenuador.
3. Atenuar la señal por 20dB y ajustar la frecuencia de 50Hz~10kHz.
4. Grabar el barrido de frecuencia.
5. Reproducir la señal grabada y asegurarse de que esté dentro de la gama mostrada en la Fig. 8 en comparación con la frecuencia de referencia (1kHz).
6. Si no está dentro de la gama de frecuencia, ajustar VR303 (CH-I) y VR302 (CH-D) de manera que el nivel de frecuencia esté dentro de la gama estándar.
7. Repetir los pasos 2~6 de arriba utilizando la cinta CrO₂ (QZZCRX) y la cinta metálica (QZZCRZ) incrementando la gama de frecuencia a 12.5kHz (50Hz~12.5kHz).
8. Asegurarse de que el nivel esté dentro de la gama mostrada en la Fig. 9.

Ajuste de Ganancia Total (Platina 2)

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y poner la unidad en modalidad de pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1kHz, -24dB). Atenuar la salida de manera que su nivel se haga 0.4V.
3. Grabar la señal de entrada.
4. Reproducir la señal grabada en el paso 3 de arriba y asegurarse de que la salida esté dentro del valor estándar.
5. Si no está dentro del valor estándar, ajustar VR7 (CH-I) y VR8 (CH-D).
6. Repetir el paso 2~5 de arriba hasta que la salida esté dentro del valor estándar.